



EMR DIVISION OF WESTON INSTRUMENTS, INC • A SCHLUMBERGER COMPANY

PRODUCT SPECIFICATION - MODEL 549-109

ELECTROSTATIC IMAGE DISSECTOR

I. PHYSICAL CHARACTERISTICS

Focusing:	Electrostatic
Deflection:	Electrostatic
Dynodes:	14; focussed, CuBe
Overall length (unpotted):	(See Figure 4) 5 5/8 inches
Major diameter (unpotted):	(See Figure 4) 1 5/8 inches
Photocathode (area):	7/8 inch diameter
Window material:	Fiber optic, 15 μ diameter N.A. 1.0 typical
Cathode type:	Semitransparent, bi-alkali
Aperture size:	To be determined (note 1)
Typical weight (unpotted):	250 grams

II. PHOTOCATHODE CHARACTERISTICS

Quantum efficiency (Q) at
4100 \AA

Typical spectral response

Cathode uniformity

Note	Minimum	Typical	Maximum	Units
2				
	10	14		% See Fig 1
11		25		%
		750		V
3		.001		in/V
4		1.05		%
6		.035		Inches
9		1900	2200	V
5,7		5.0×10^{-12}	1×10^{-11}	A
8		30		%

III. OPERATING CHARACTERISTICS

Accelerating voltage

Deflection sensitivity

Linearity distortion

Cathode separation for a
rejection ratio of: 200

Multiplier voltage for a
gain of 10^6

Anode dark current
(DC) at 10^6 gain

Anode Uniformity

APP'VD. ENG. <i>M. M. M.</i>	DATE 8-6-70	APP'VD. PROD.	DATE	CLASSIFICATION EXPERIMENTAL SPECIFICATION
APP'VD. MARKTG. <i>M. M. M.</i>	DATE 12 Aug 70	ORIG. BY J. J. H.	DATE 8/6/70	EMR SPEC. NO. PAGE 1 OF 7 REV.



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IV. MAXIMUM RATINGS

Note	Minimum	Typical	Maximum	Units
			4000	V
10			85	°C
9,10			10	μA

Supply voltage
 Temperature
 Anode current

V. ENVIROMENTAL

Temperature -40°C to +85°C

NOTES:

- The determined aperture size referred to photocathode.
- Specified characteristics are determined by the combination of photocathode spectral response and the spectral transmission characteristics of the faceplate.
- The deflection voltage required for a given deflection is directly proportional to the accelerating voltage. The stated .001 deflection sensitivity implies a .001" displacement (of an electron image at the aperture) per deflection volt when the acclerating potential is 750 volts.
- The linearity/distortion figure is determined by the following relationship:

$$\frac{V_a/A}{A_b/B}$$
 where A_a and V_b are the deflection voltages corresponding to points A and B on the faceplate at separation of A and B respectively from the electrical center. The measurement is made along an axis for the worst case condition over the center 0.6 inch diameter.
- This characteristic is dependent upon the aperture size. The stated values are for a .040 inch square aperture.
- A black mask in optical contact with the faceplate is oriented with one edge along an electrical scan axis in such a manner as to mask one half the photocathode area. The photocathode is illuminated with collimated blue light, and the anode

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NOTES: (Cont'd)

signal is monitored as the axis perpendicular to the mask edge is scanned from the illuminated to the non-illuminated half of the photocathode. If I_s is the anode signal from the illumination portion, then the position on the photocathode corresponding to a signal level of $0.5I_s$ is defined as the reference position corresponding to the mask edge. The equivalent cathode separation distance (deflection voltage times deflection sensitivity) for a rejection ratio of 200 can be determined from the deflection voltage required to attenuate the anode signal to $\frac{.5 I_s}{200}$.

7. Dark current and background count rate are measured at 20°C after suitable aging in dark.
8. The anode uniformity shall not vary more than 30% from maximum when a .010 diameter spot originating at any area of the .6 effective cathode is swept over the electron aperture.
9. Recommended maximum average anode current is 1μA.
10. Absolute maximum rating, prolonged exposure at maximum ratings will result in permanent changes.
11. Cathode uniformity, when a .01 inch diameter light spot is scanned across the .6 effective photocathode shall not vary more than 25% from maximum. The tube is connected in a diode configuration for this measurement.

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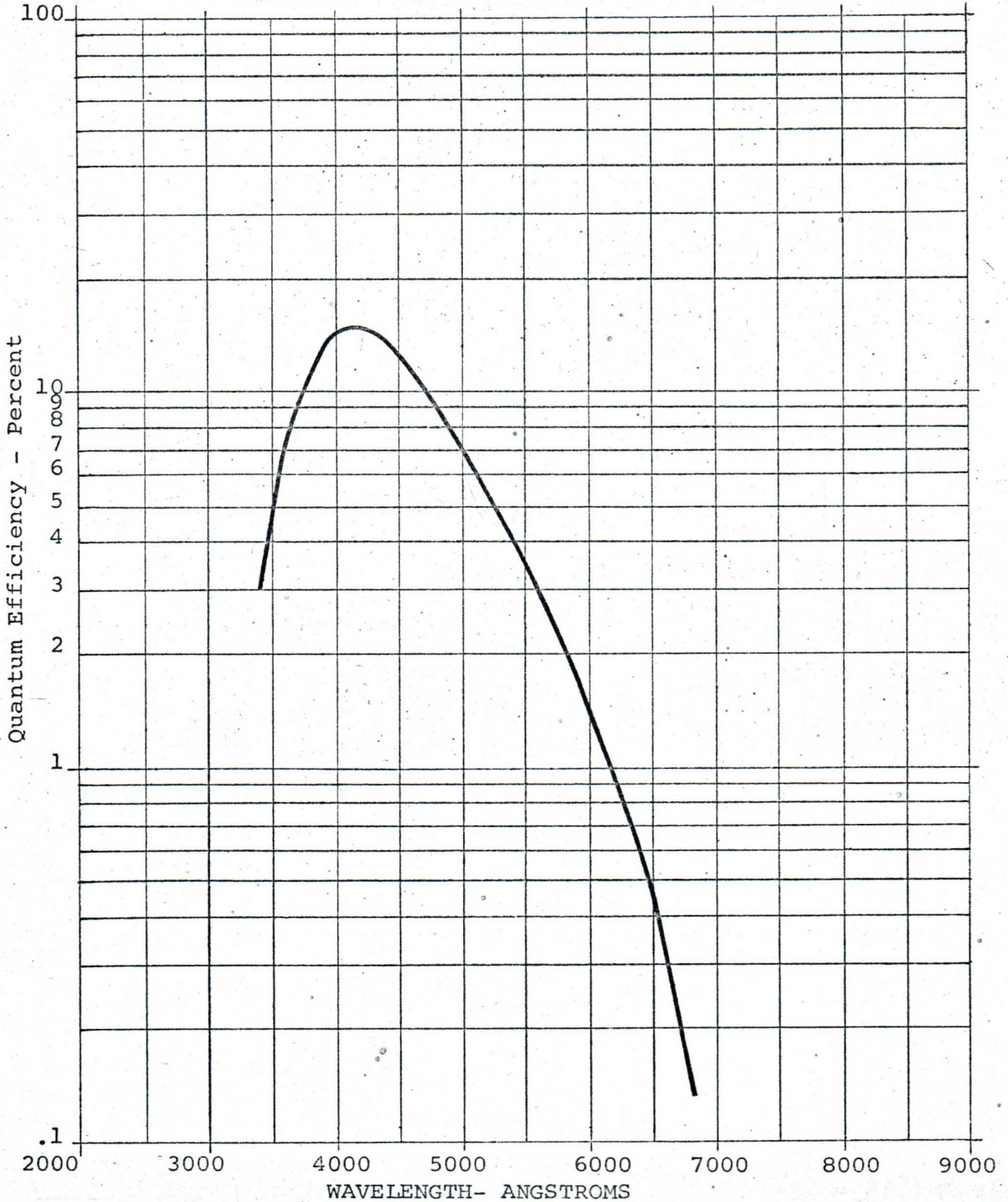


Figure 1: Typical Spectral Response Characteristics

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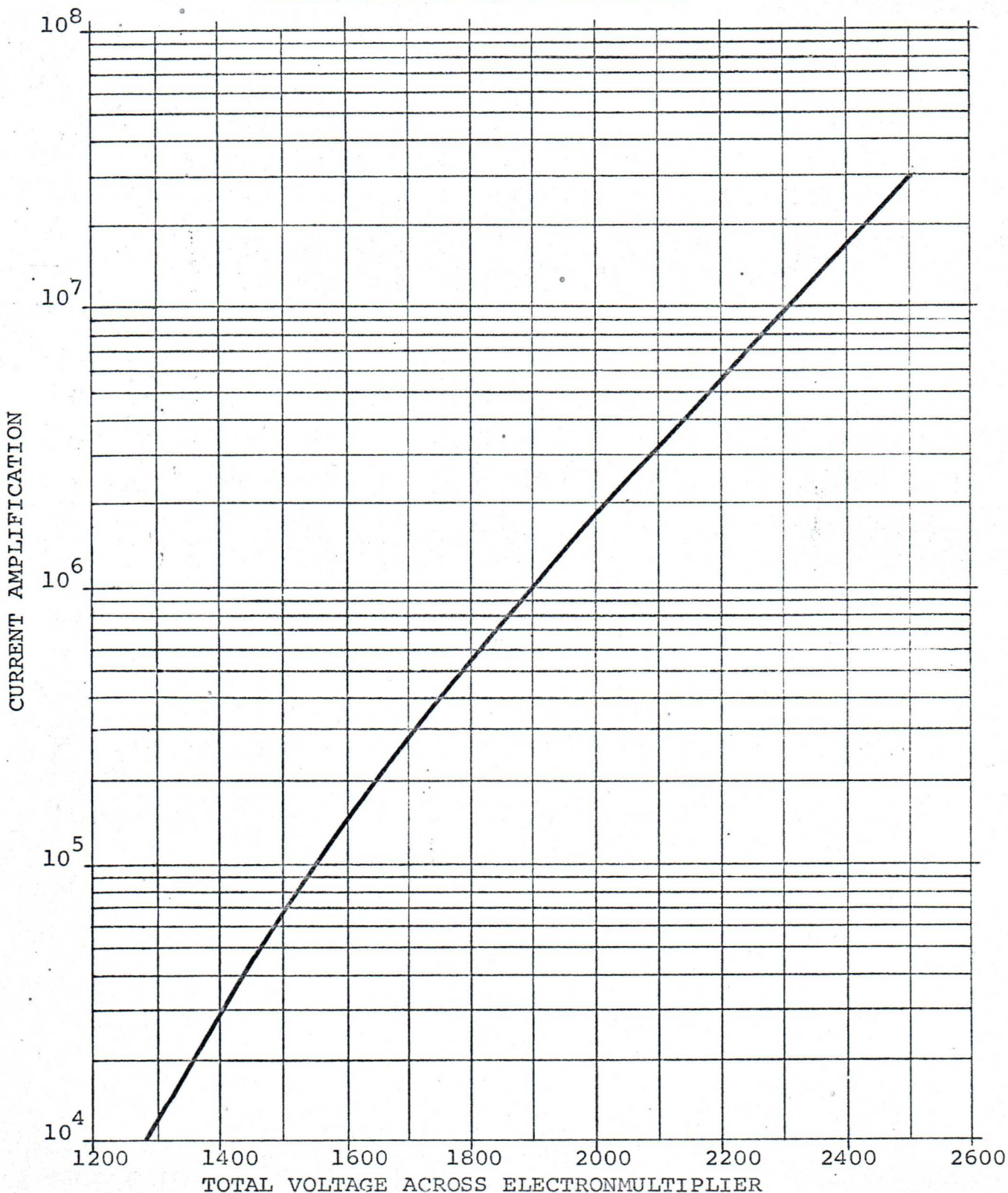


Fig. 2 TYPICAL VOLTAGE AMPLIFICATION

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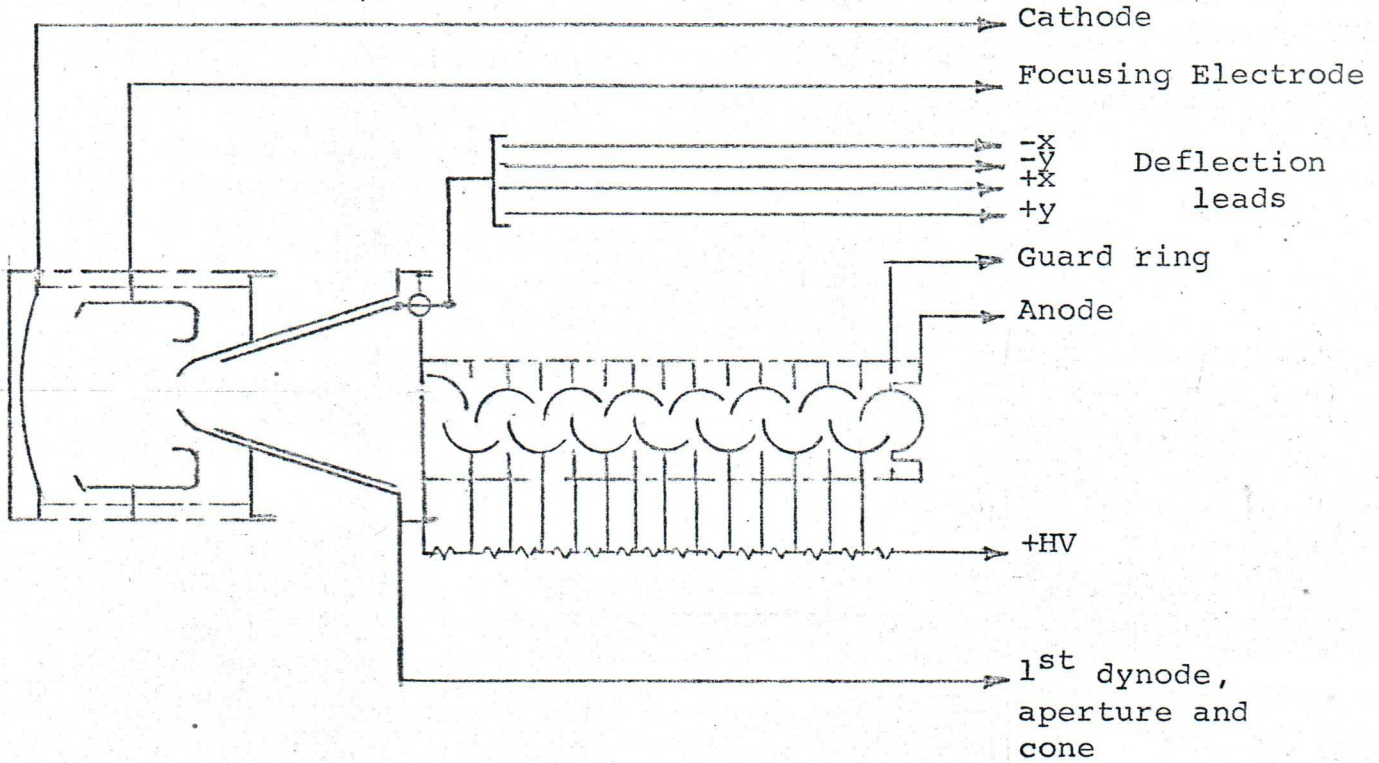


Figure 3

SCHEMATIC DIAGRAM

This tube can be operated with cathode, aperture or anode at ground potential.

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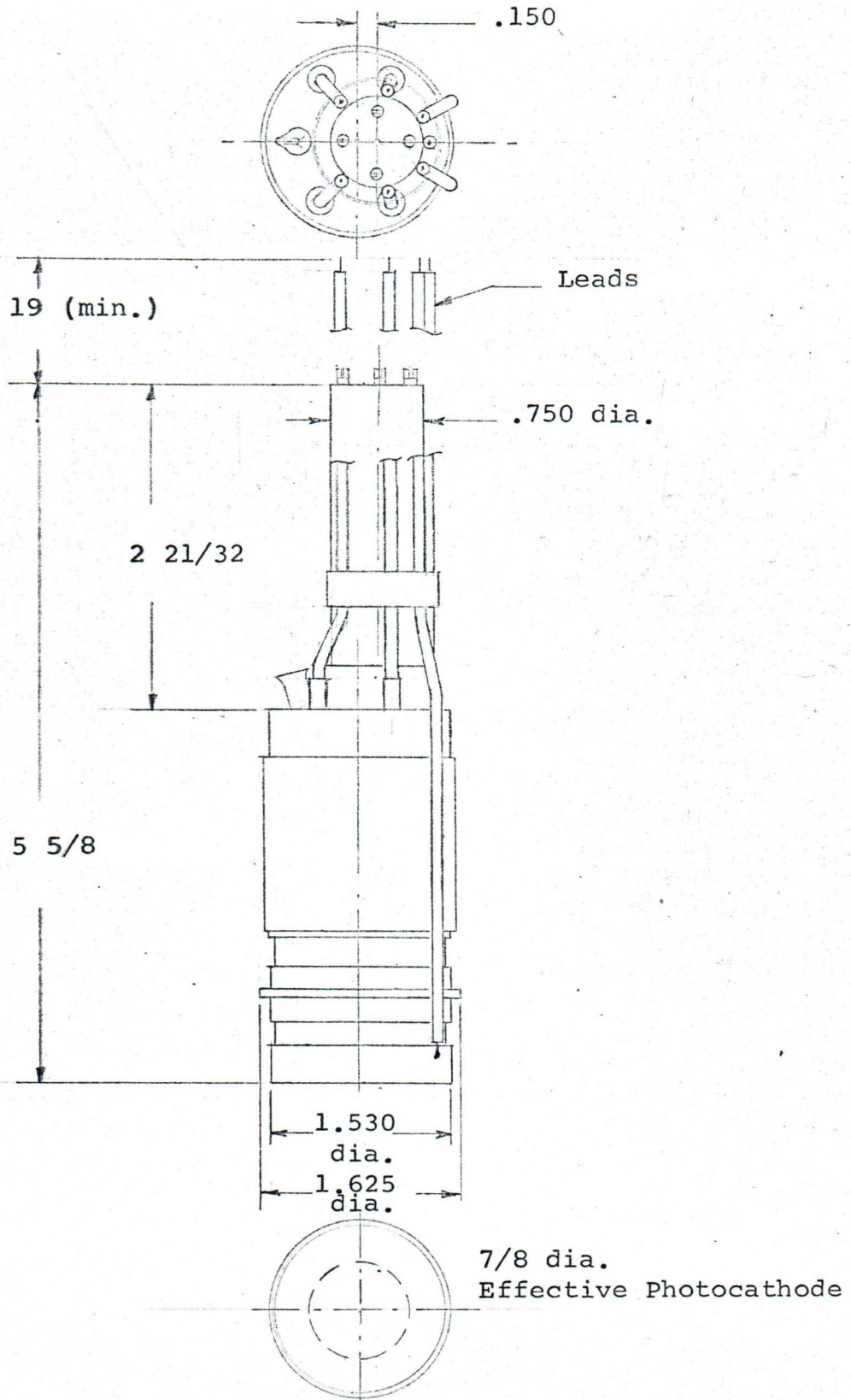


Figure 4
Outline

APP'VD. ENG. <i>M. L. ...</i>	DATE 8/12/70	APP'VD. PROD. _____	DATE _____	CLASSIFICATION EXPERIMENTAL SPECIFICATION
APP'VD. MARKTG. <i>...</i>	DATE 12/22/70	ORIG. BY J. J. H.	DATE 8/11/70	EMR SPEC. NO. PAGE 7 OF 7

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PRODUCT SPECIFICATION - MODEL 549-117, Rev.
ELECTROSTATIC IMAGE DISSECTOR

I. PHYSICAL CHARACTERISTICS

Focusing:	Electrostatic
Deflection:	Electrostatic
Dynodes:	14; focussed, CuBe
Overall length (potted):	7-1/2 inches
Major diameter (potted):	2-7/8 inches
Photocathode diameter (Effective):	1/2 inch
Window material:	Fiber optic, 15 μ diameter N.A. 1.0 (typical)
Cathode type:	Semitransparent, tri-alkali
Aperture size:	.010 in. (Note 1)
Typical weight (potted):	800 grams

II. PHOTOCATHODE CHARACTERISTICS

Quantum efficiency (Q) at 4100 Å

Cathode peak radiant sensitivity

Typical spectral response

Note	Minimum	Typical	Maximum	Units
2				
	10	15		%
		.050		A/W See Fig.1
		750		V
3		600		V/kv - in.
		1.03	1.05	
4		.010		in.
		.020		in.
		2600	3000	V See Fig.2
5,7		5.0 \times 10 ⁻¹²	10 ⁻¹¹	A

III. OPERATING CHARACTERISTICS

Accelerating voltage

Deflection voltage

Linearity/distortion

Cathode separation for a rejection ratio of: 10²
10²Multiplier voltage for a gain of 10⁶Anode dark current (DC) at 10⁶ gain

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	Note	Minimum	Typical	Maximum	Units
Background count rate	5,7,8		2	10	counts/sec
Anode uniformity	9		15	25	%
IV. MAXIMUM RATINGS					
Supply voltage				4500	V
Temperature	11			60	°C
Anode current	10			100	μA

V. ENVIRONMENTAL

Vibration: Random See Note 12
 Sinusoidal 5,8, 20 to 2000 Hz
 Temperature: -7°C to 60°C

NOTES:

- The aperture size referred to photocathode and shape will be determined by the particular application for which the device is intended. Aperture diameters down to 0.001 inch can be provided.
- Specified characteristics are determined by the combination of photocathode spectral response and the spectral transmission characteristics of the faceplate.
- The deflection voltage required for a given deflection is directly proportional to the accelerating voltage.
- The linearity/distortion figure is determined by the following relationship:

$$\frac{V_a/A}{V_b/B}$$

where V_a and V_b are the deflection voltages corresponding to points on the faceplate at separation of A and B respectively from the electrical center. The measurement is made along an axis for the worst case condition over the center 0.5 inch diameter.

- This characteristic is dependent upon the aperture size. The stated values are for a 0.010 inch circular aperture.

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NOTES: (Cont'd)

- 6. A black mask in optical contact with the faceplate is oriented with one edge along an electrical scan axis in such a manner as to mask one half the photocathode area. The photocathode is illuminated with collimated blue light, and the anode signal is monitored as the axis perpendicular to the mask edge is scanned from the illuminated to the non-illuminated half of the photocathode. If I_s is the anode signal from the illumination portion, then the position on the photocathode corresponding to a signal level of $0.5 I_s$ is defined as the reference position corresponding to the mask edge. The equivalent cathode separation distances (deflection voltage times deflection sensitivity) corresponding to the $10^{-1} I_s$ and $10^{-2} I_s$ points are defined as the 10 and 10^2 rejection ratio separation distances respectively.
- 7. Dark current and background count rate are measured at 20°C after suitable aging in dark.
- 8. A pulse height discriminator level of $\bar{e}/4$ is used where \bar{e} is the average single electron pulse height.
- 9. The anode non-uniformity is measured in the pulse counting mode with the entire photocathode uniformly illuminated with 4200 \AA radiation. The non-uniformity is defined as

$$\frac{\text{Maximum count rate} - \text{Minimum count rate}}{\text{Maximum count rate}} \times 100\%$$
 for the worst case condition over the center 0.5 inch diameter of the photocathode.
- 10. Recommended maximum average anode current is $1 \mu\text{A}$.
- 11. Absolute maximum rating, prolonged exposure at maximum ratings will result in permanent changes.
- 12. Random Vibration
 - 10 - 35 cps @ +6 db/oct
 - 35 - 700 cps @ $0.0705 \text{ g}^2/\text{cps}$
 - 700 - 900 cps @ -18 db/oct
 - 900 - 2000 cps @ $0.015 \text{ g}^2/\text{cps}$

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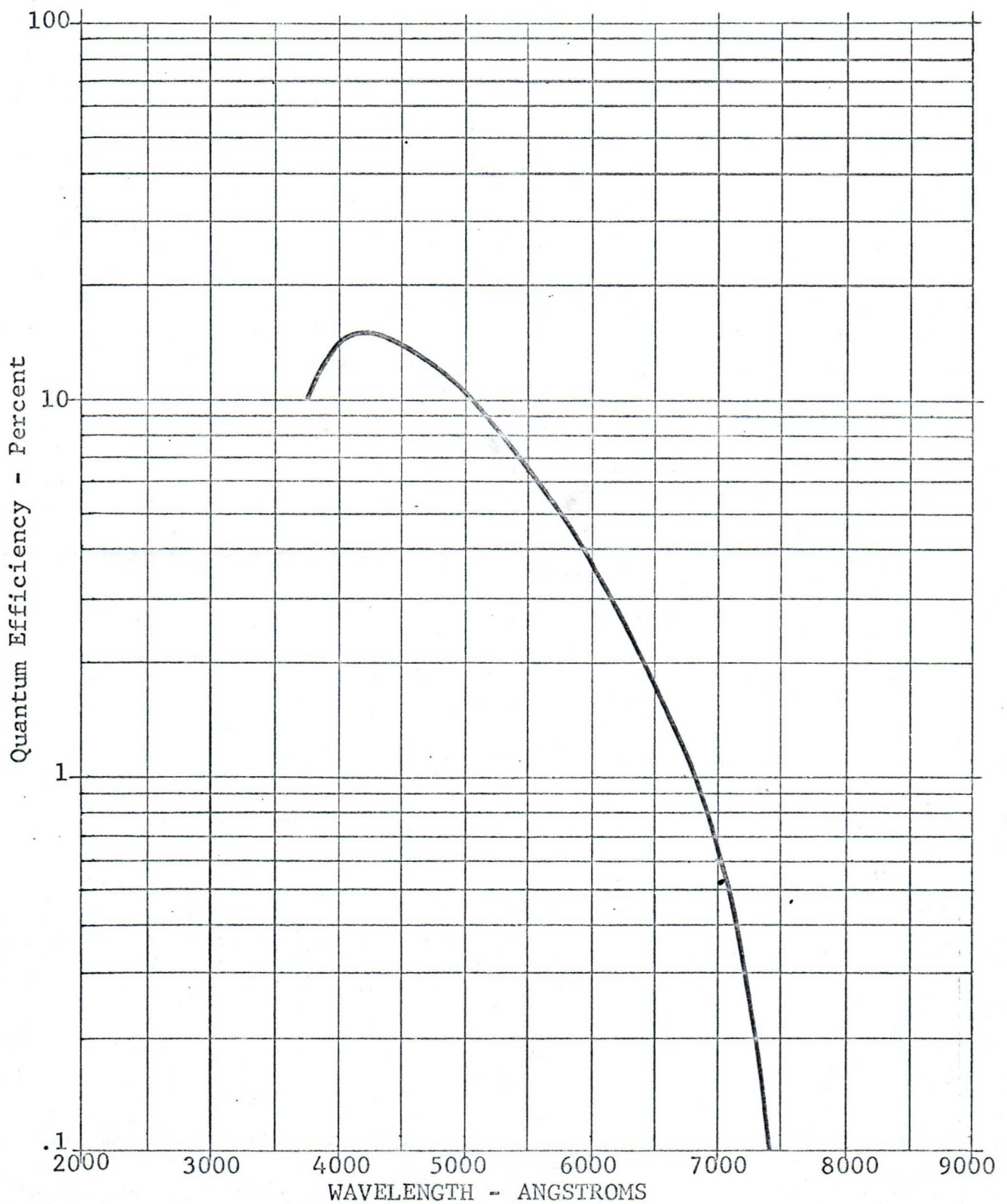


FIGURE 1: Typical Spectral Response Characteristics

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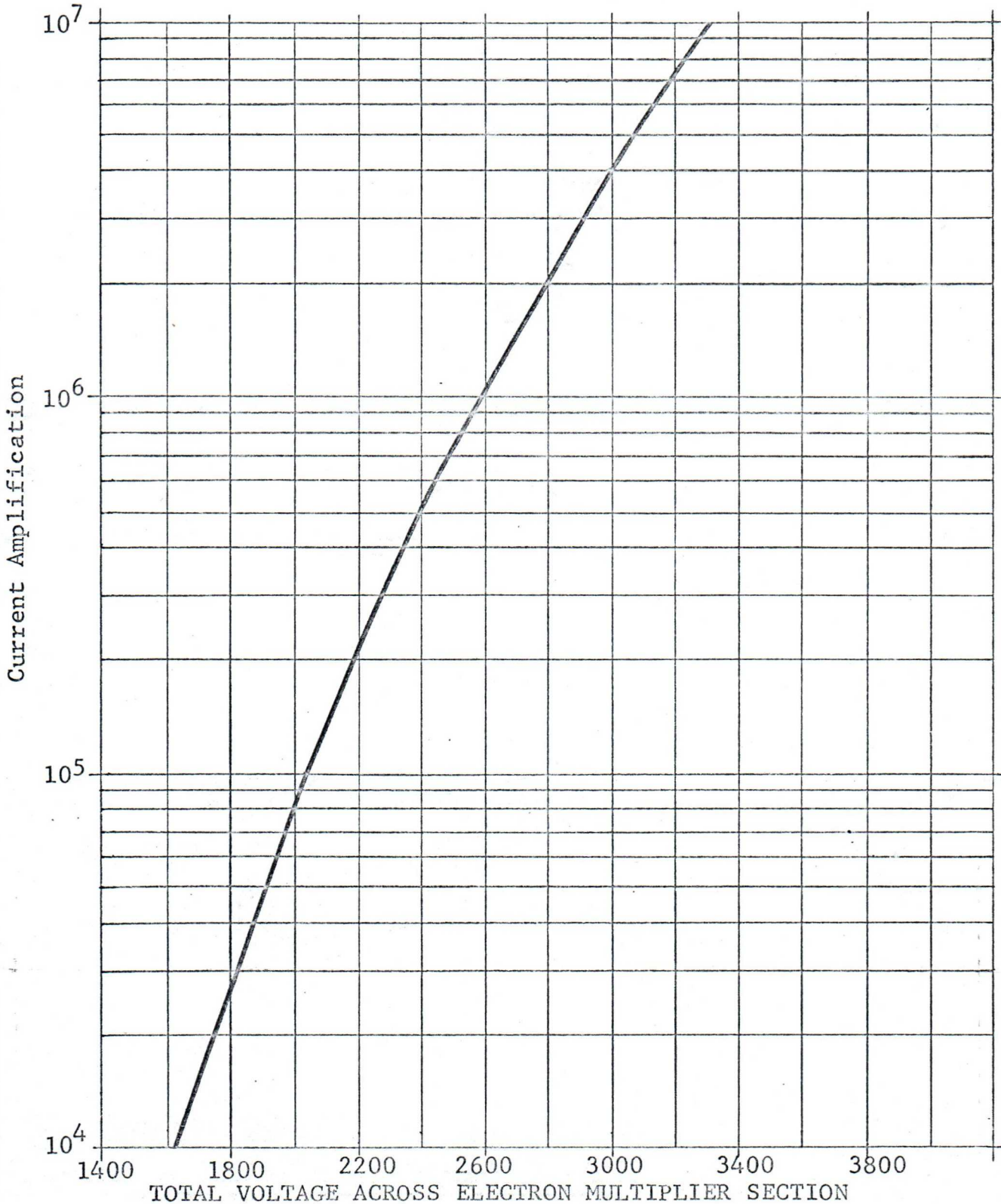


FIGURE 2: Multiplier Characteristic

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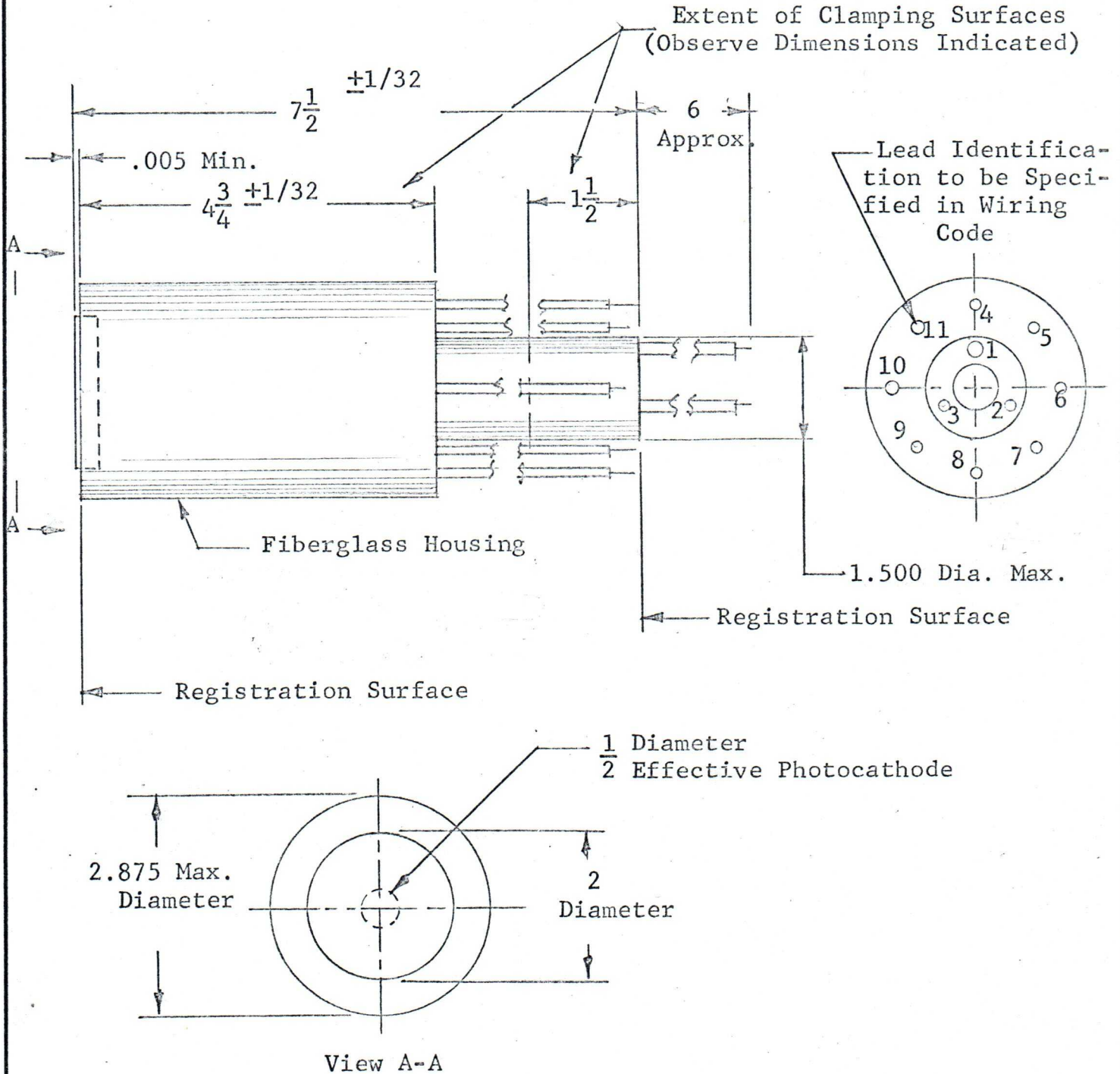


FIGURE 3
OUTLINE DRAWING

APP'VD. ENG. <i>[Signature]</i>	DATE 10/17/69	APP'VD. PROD.	DATE	CLASSIFICATION EXPERIMENTAL SPECIFICATION
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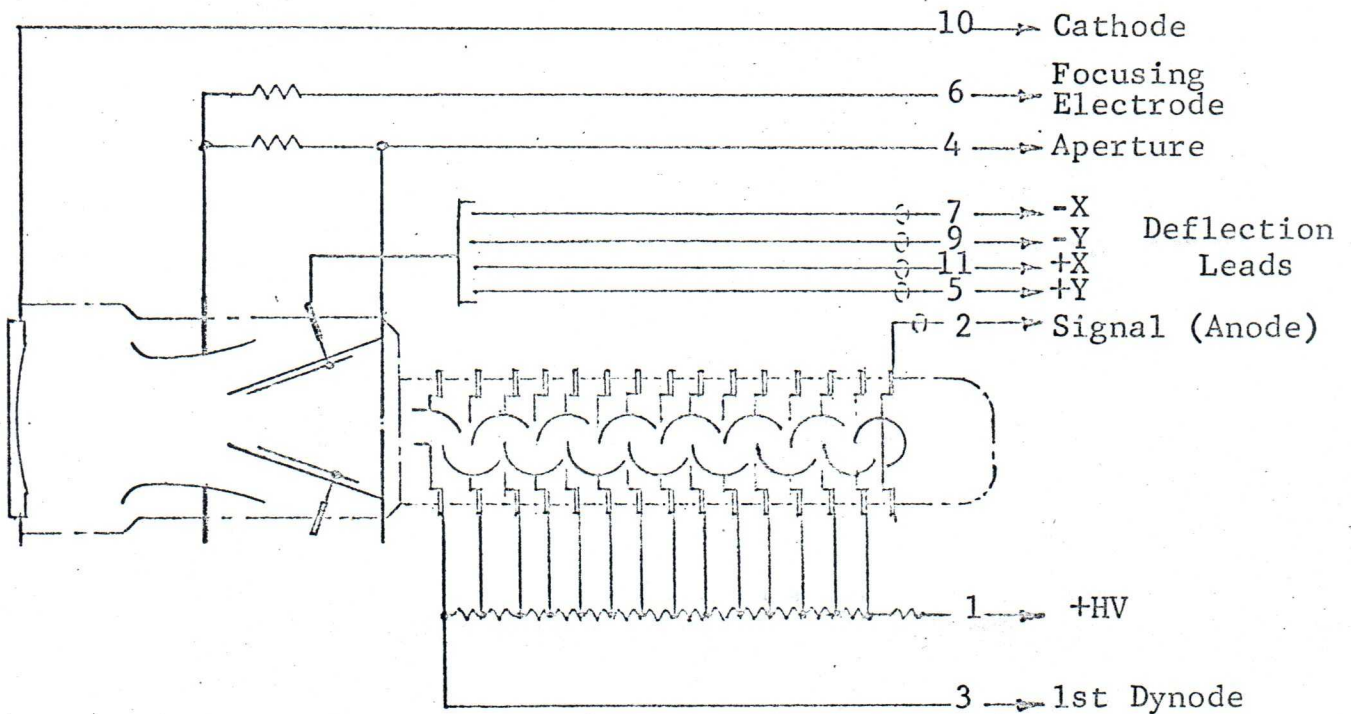


FIGURE 4

SCHEMATIC DIAGRAM

APP'VD. ENG. <i>[Signature]</i>	DATE 10/3/69	APP'VD. PROD.	DATE	CLASSIFICATION EXPERIMENTAL SPECIFICATION
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PRODUCT SPECIFICATION - MODEL 549-126 Rev.
ELECTROSTATIC IMAGE DISSECTOR

I. PHYSICAL CHARACTERISTICS

Focusing:	Electrostatic
Deflection:	Electrostatic
Dynodes:	14; focussed, CuBe
Overall length (potted):	7-1/2 inches
Major diameter (potted):	2-7/8 inches
Photocathode (Effective):	6 mm square
Window material:	Fiber optic, 15μ diameter N.A. 1.0 (typical)
Cathode type:	Semitransparent: tri-alkali
Aperture size:	.75 mm square (note 1)
Typical weight (potted):	800 grams

II. PHOTOCATHODE CHARACTERISTICS

Quantum efficiency (Q) at
4100 Å
Typical spectral response

Note	Minimum	Typical	Maximum	Units
2				
	10	18		% See Fig.1
		750		V
3		600		V/kv
4		2.0	4.0	%
6		.6	.75	mm
		1.50	1.50	mm
8, 12		2600	3000	V
5,7		5.0x10 ⁻¹²	1x10 ⁻¹¹	A
5,7, 8		20	90	counts /sec
9		±15	±25	%

III. OPERATING CHARACTERISTICS

Accelerating voltage
Deflection voltage
Linearity distortion
Cathode separation for a
rejection ratio of: 10²
10³
Multiplier voltage for a
gain of 10⁶
Anode dark current (DC) at
10⁶ gain
Background count rate
Anode uniformity

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IV. MAXIMUM RATINGS

Supply voltage
Temperature
Anode current

Note	Minimum	Typical	Maximum	Units
			4500	V
11			60	°C
10			100	μA

V. ENVIRONMENTAL

Temperature: -40°C to +60°C

NOTES:

1. The aperture size referred to photocathode.
2. Specified characteristics are determined by the combination of photocathode spectral response and the spectral transmission characteristics of the faceplate.
3. The deflection voltage required for a given deflection is directly proportional to the accelerating voltage.
4. Measured as follows: a checked (alternate black & white) 8x8 pattern .1% accuracy is projected on the photocathode and the potential necessary to deflect to each square is recorded. The linearity is then defined as follows:

$$\text{Linearity} = \frac{\text{Largest Voltage Interval} - \text{Smallest Voltage Interval}}{2 \times \text{Average Voltage Interval}} \times 100\%$$

5. This characteristic is dependent upon the aperture size. The stated values are for a 0.75 mm square aperture.
6. A black mask in optical contact with the faceplate is oriented with one edge along an electrical scan axis in such a manner as to mask one half the photocathode area. The photocathode is illuminated with collimated blue light, and the anode signal is monitored as the axis perpendicular to the mask edge is scanned from the illuminated to the non-illuminated half of the photocathode. If I_s is the anode signal from the illumination portion, then the position on the photocathode corresponding to a signal level of $0.5 I_s$ is defined as the reference position corresponding to the mask edge. The equivalent cathode separation distances

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NOTES: (Cont'd)

(deflection voltage times deflection sensitivity) corresponding to the $10^{-1} I_s$ and $10^{-2} I_s$ points are defined as the 10 and 10^2 rejection ratio separation distances respectively.

- 7. Dark current and background count rate are measured at 20°C after suitable aging in dark.
- 8. A pulse height discriminator level of $\bar{e}/4$ is used where \bar{e} is the average single electron pulse height.
- 9. The anode non-uniformity is measured in the pulse counting mode with the entire photocathode uniformly illuminated with 4200 Å radiation. The non-uniformity is defined as

$$\pm \frac{\text{Maximum} - \text{Minimum}}{2 \times \text{Average Count Rate}} \times 100\%$$

for the worst case condition over the useful area of the photocathode.

- 10. Recommended maximum average anode current is 1 μA.
- 11. Absolute maximum rating, prolonged exposure at maximum ratings will result in permanent changes.
- 12. MCA calibrated to specify electrons/channel. AC gain defined as (elec/chan) x average channel.

MCA = Multichannel Analyzer.

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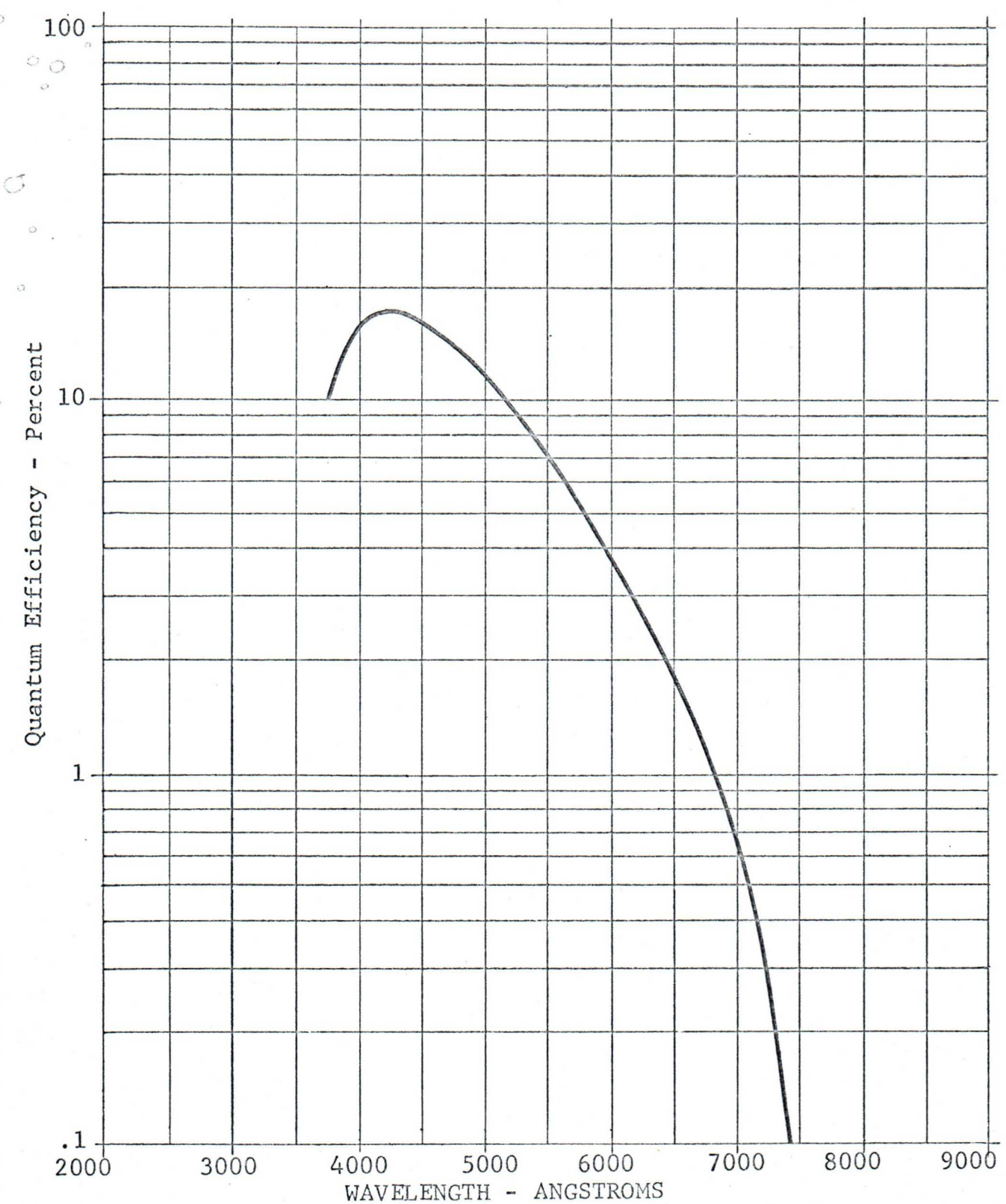


Figure 1: Typical Spectral Response Characteristics

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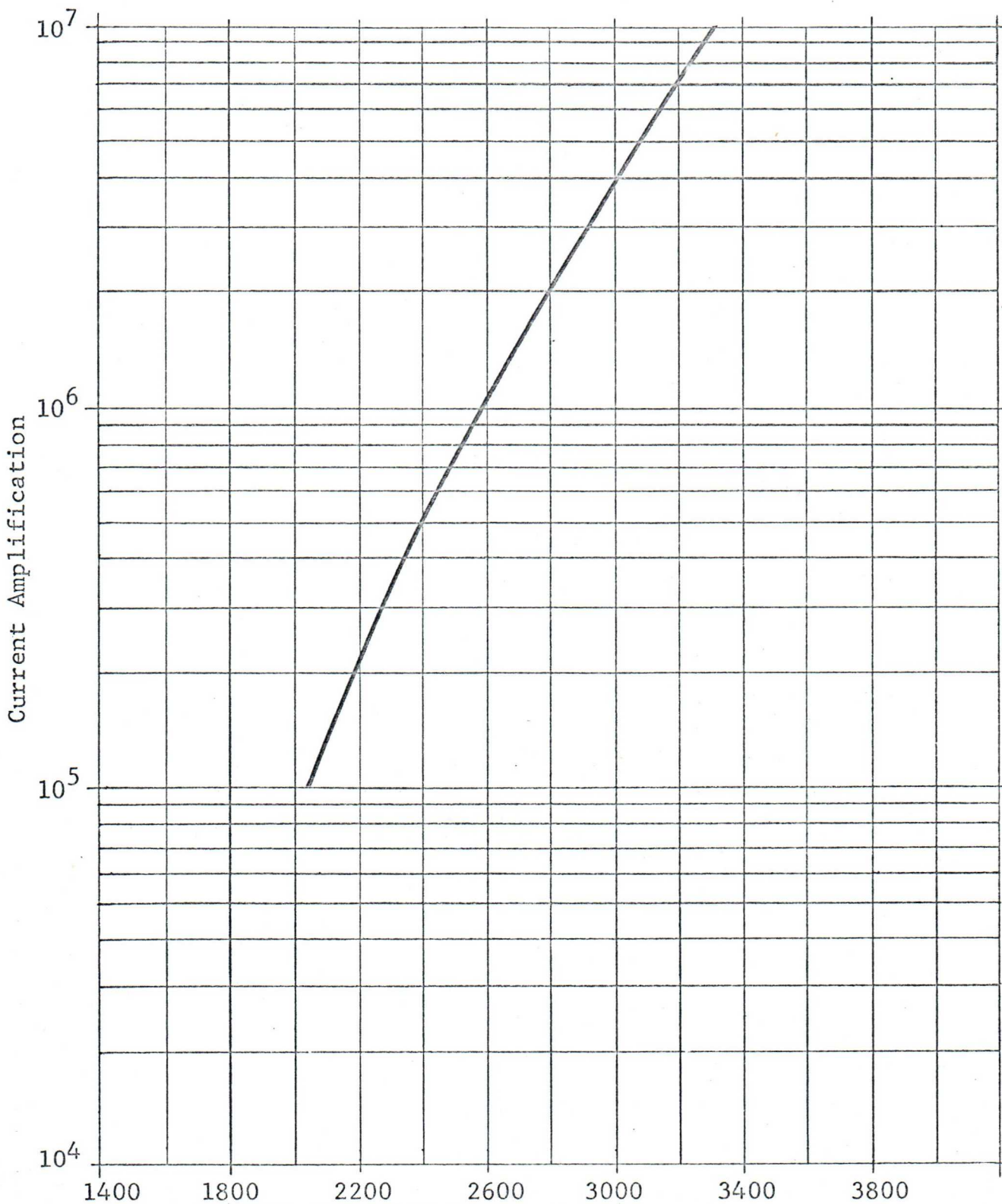
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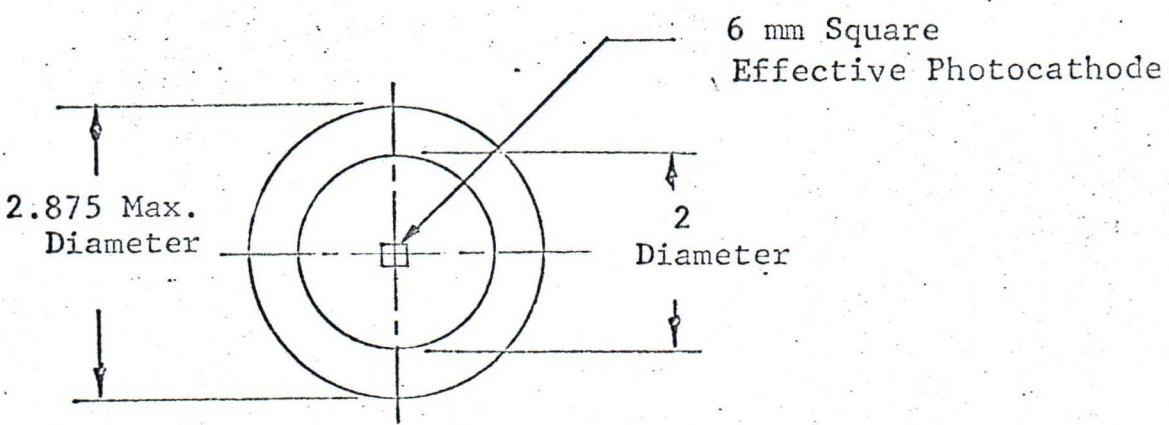
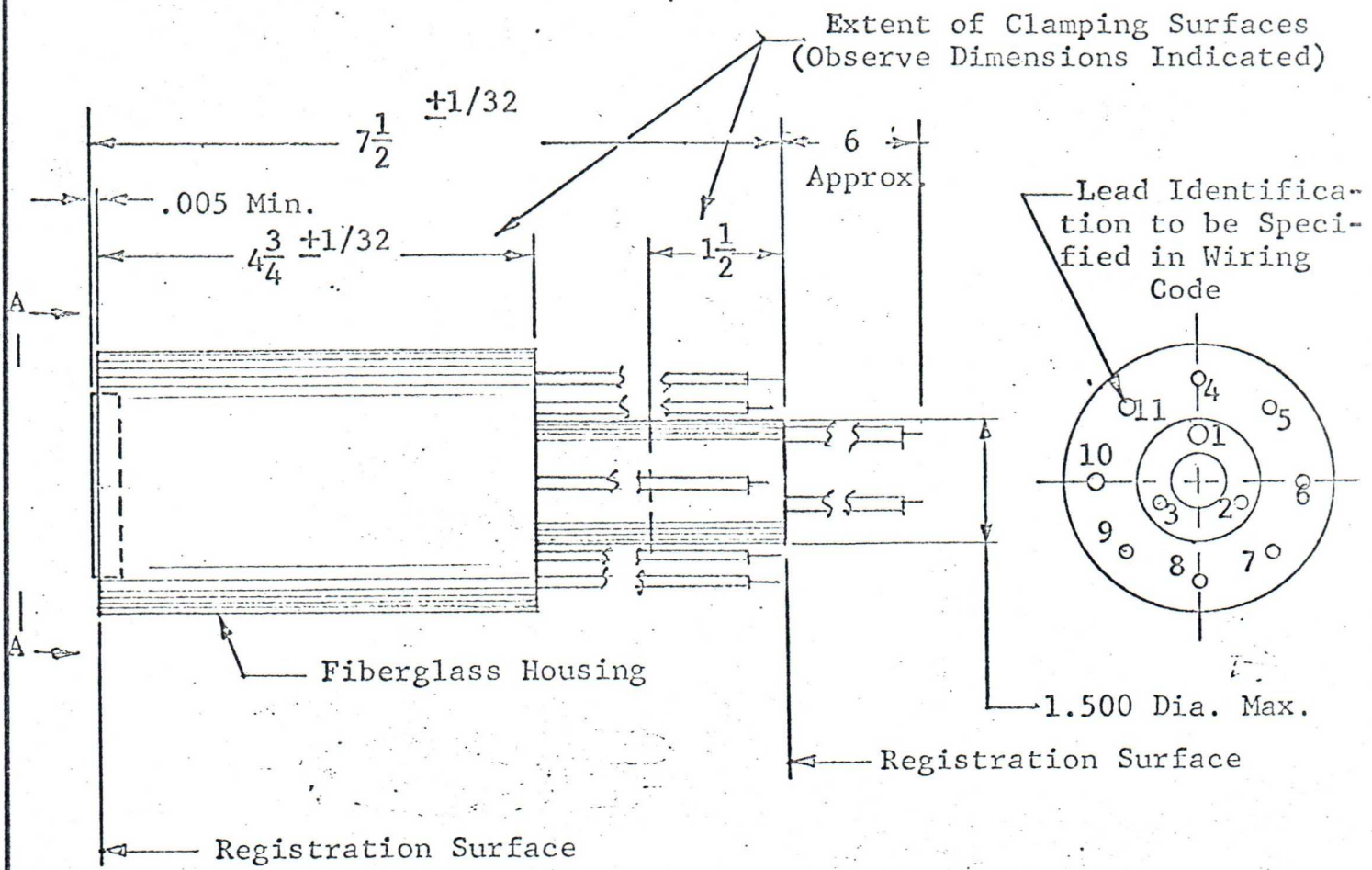
TOTAL VOLTAGE ACROSS ELECTRON MULTIPLIER SECTION
Figure 2: Multiplier Characteristics

APP'VD. ENG. <i>(Signature)</i>	DATE <i>1/29/70</i>	APP'VD. PROD.	DATE	CLASSIFICATION EXPERIMENTAL SPECIFICATION
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View A-A

FIGURE 3
OUTLINE DRAWING

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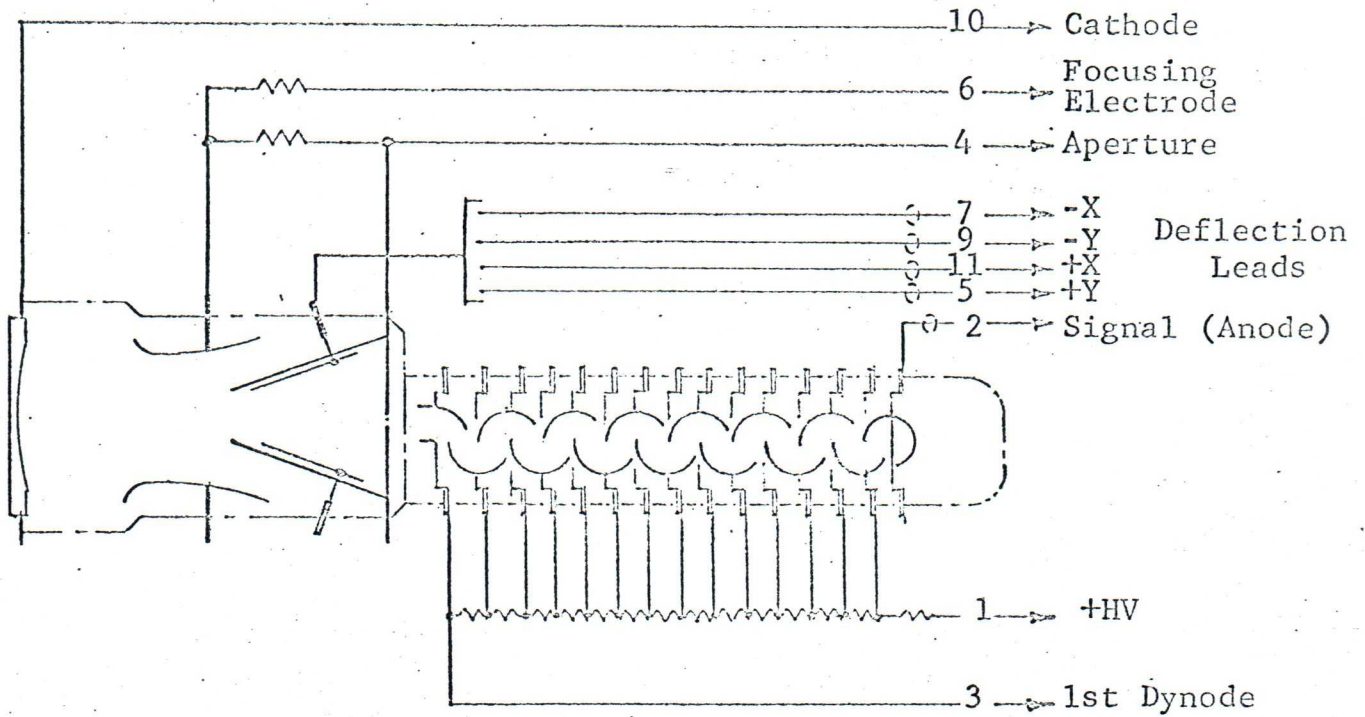


FIGURE 4

SCHEMATIC DIAGRAM

APP'VD. ENG. <i>[Signature]</i>	DATE 1/26/70	APP'VD. PROD.	DATE	CLASSIFICATION EXPERIMENTAL SPECIFICATION
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PRODUCT SPECIFICATION - MODEL 549-4276A Rev. B

IMAGE DISSECTOR

I. PHYSICAL CHARACTERISTICS

Focusing method:	Magnetic (note 8)
Deflection method:	Magnetic (note 8)
Aperture size:	.00075 in. diameter
Number and type of dynodes:	14; Cu-Be
Window material:	7056 glass, flat
Cathode sensitive area:	2.0 in. ² , 1.6 in. diameter
Cathode type:	Semitransparent, multialkali
Maximum overall diameter:	2.3 in.
Maximum overall length:	12-1/8 inch
Typical weight (unpotted):	250 grams

II. PHOTOCATHODE CHARACTERISTICS

Quantum efficiency (Q) at

4100 Å	
6300 Å	
8000 Å	

Cathode luminous sensitivity
 Cathode peak radiant sensitivity
 Cathode uniformity at 4100 Å
 Typical spectral response

Note	Minimum	Typical	Maximum	Units
1	16	20		%
		5		%
		.7		%
	100	150		µa/lm
		.065		A/W
		+5	+10	%
				See Fig. 1
1,2		1420		V
		2130		V
		3160		V
1		1.0x10 ⁻¹²		A
		2.0x10 ⁻¹²		A
		4.0x10 ⁻¹²	1.0x10 ⁻¹¹	A
1				
3		+1.5	+2.0	%
3		+1.5	+2.0	%

III. MULTIPLIER CHARACTERISTICS

Voltage required for current amplification (G) of:

10 ⁴	
10 ⁵	
10 ⁶	

Dark current (i_D) at a current amplification of:

10 ⁴	
10 ⁵	
10 ⁶	

IV. DYNAMIC CHARACTERISTICS

Horizontal linearity
 Vertical linearity

EMR DIVISION OF WESTON INSTRUMENTS, INC • A SCHLUMBERGER COMPANY

PRODUCT SPECIFICATION - MODEL 549-4276A Rev. B

IMAGE DISSECTOR

	Note	Minimum	Typical	Maximum	Units
Resolution at 50% amplitude response over 1.5 in. diameter circle					
Paraxial		1300	1400		TV lines per in.
Off-axis (dynamic focus)		1100	1200		TV lines per in.
Shading or anode uniformity over 1.5 in. diameter circle at 4100 Å			+12	+20	See Fig. 3 %
Dynamic range (shades of grey)	4	13	15		Steps
Signal to noise ratio	5	30	33.6		db (See Fig. 4)
Cathode current density			10		µa/cm ²
V. MAXIMUM RATINGS	6				
Cathode current density	7			30	µa/cm ²
Anode current				1	mA
Ambient temperature				60	°C
Supply voltage				4000	V

VI. ENVIRONMENTAL

Shock: 20 g, 11 millisecond duration
 Vibration: 20 g, 20 to 2000 Hz
 Temperature: -30° to +60°C

EMR DIVISION OF WESTON INSTRUMENTS, INC • A SCHLUMBERGER COMPANY

PRODUCT SPECIFICATION - MODEL 549-4276A Rev. B
IMAGE DISSECTOR

NOTES:

1. All data at room temperature = 20°C.
2. Voltage across multiplier only.
3. Measured as follows: an 11 line pattern of .1% linearity is projected onto a 1.5 inch diameter cathode and the current intervals in the deflection coils necessary to go from one line to the next are measured.

$$\text{Linearity} = \pm \frac{\text{Largest Interval} - \text{Smallest Interval}}{2 \times \text{Average Interval}} \times 100\%$$

4. Transmission of successive steps on the test slide changes by increments of $\sqrt{2}$.
5. $(S/N)_{\text{rms}}$ at a cathode current density of $10 \mu\text{a}/\text{cm}^2$ and a frequency bandwidth equal to 12.5 k Hz.
6. Absolute maximum ratings; prolonged exposure at maximum ratings may result in permanent deterioration of tube performance.
7. Averaged over any interval not greater than 10 sec.
8. The 549-4276A is designed to utilize the standard 3-inch image orthicon deflection and focus coil assemblies. Custom built coils may be required for specific scan requirements.

APP'VD. ENG. <i>JL</i>	DATE 11/3-167	APP'VD. PROD.	DATE	CLASSIFICATION EXPERIMENTAL SPECIFICATION
APP'VD. MARKTG. <i>M.G. Winters</i>	DATE 12/19/69	ORIG. BY	DATE	EMR SPEC. NO.

EMR DIVISION OF WESTON INSTRUMENTS, INC • A SCHLUMBERGER COMPANY

PRODUCT SPECIFICATION - MODEL 549-4276A Rev. B
IMAGE DISSECTOR

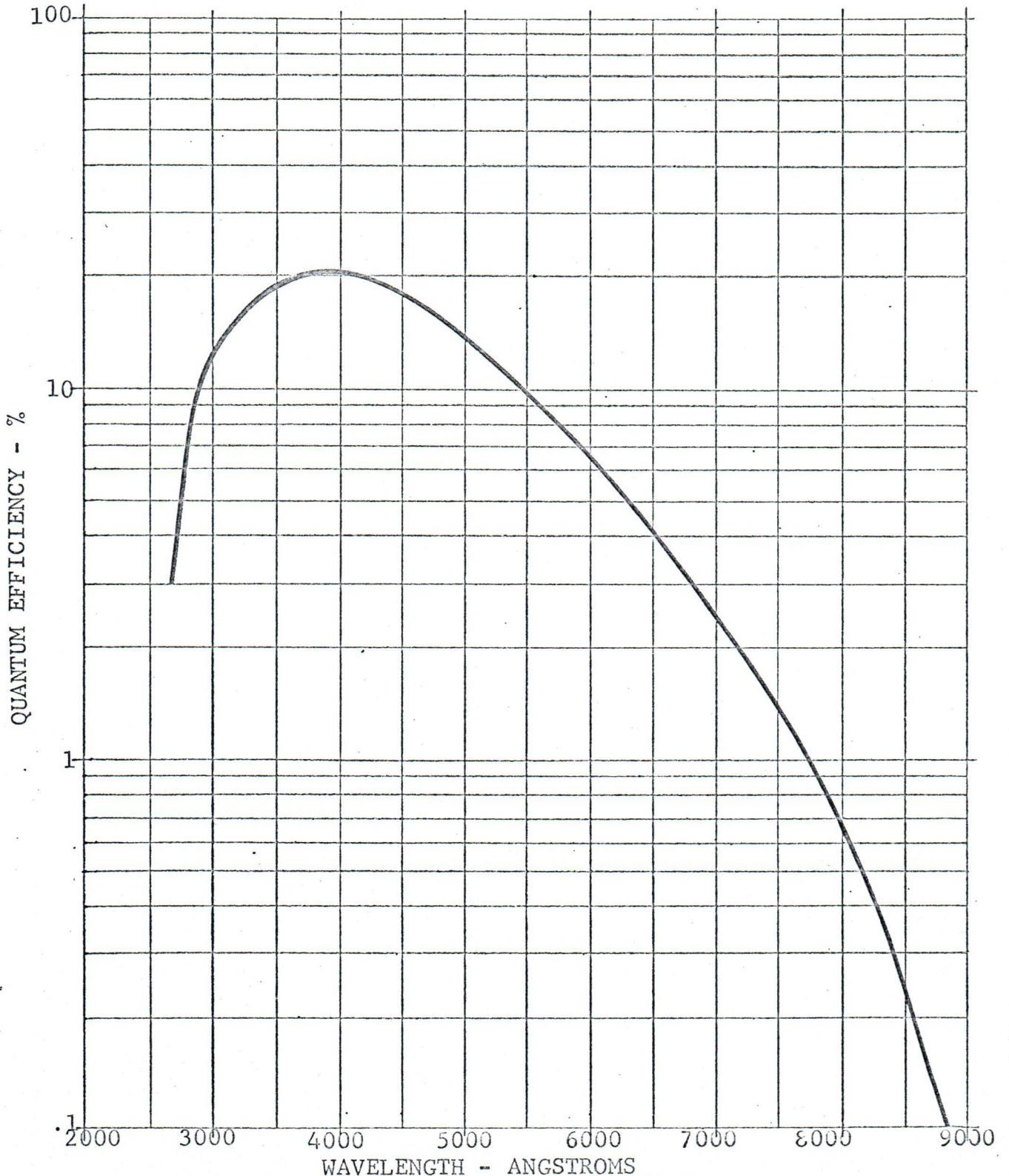


Figure 1: Typical Quantum Efficiency

APP'VD. ENG. <i>JR</i>	DATE 9/20/67	APP'VD. PROD.	DATE	CLASSIFICATION EXPERIMENTAL SPECIFICATION
APP'VD. MARK'G. <i>W. G. Smith</i>	DATE 12/19/69	ORIG. BY	DATE	EMR SPEC. NO.

EMR DIVISION OF WESTON INSTRUMENTS, INC • A SCHLUMBERGER COMPANY

PRODUCT SPECIFICATION - MODEL 549-4276A Rev. B
IMAGE DISSECTOR

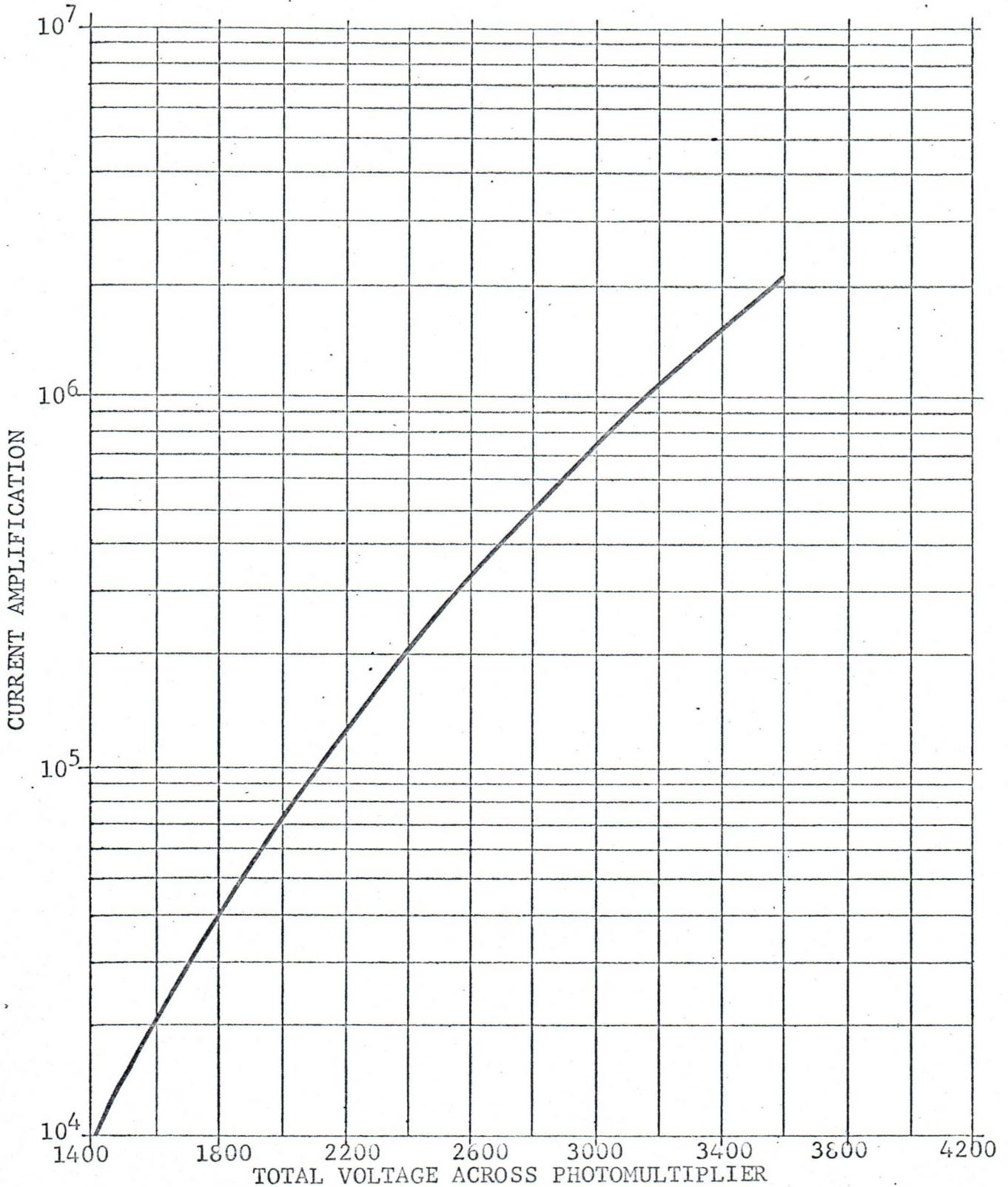


Figure 2: Typical Current Amplification

APP'VD. ENG. <i>[Signature]</i>	DATE 4/20/67	APP'VD. PROD.	DATE	CLASSIFICATION EXPERIMENTAL SPECIFICATION
APP'VD. MARK'G. <i>[Signature]</i>	DATE 12/19/69	ORIG. BY	DATE	EMR SPEC. NO.

EMR DIVISION OF WESTON INSTRUMENTS, INC • A SCHLUMBERGER COMPANY

PRODUCT SPECIFICATION - MODEL 549-4276A Rev. B
IMAGE DISSECTOR

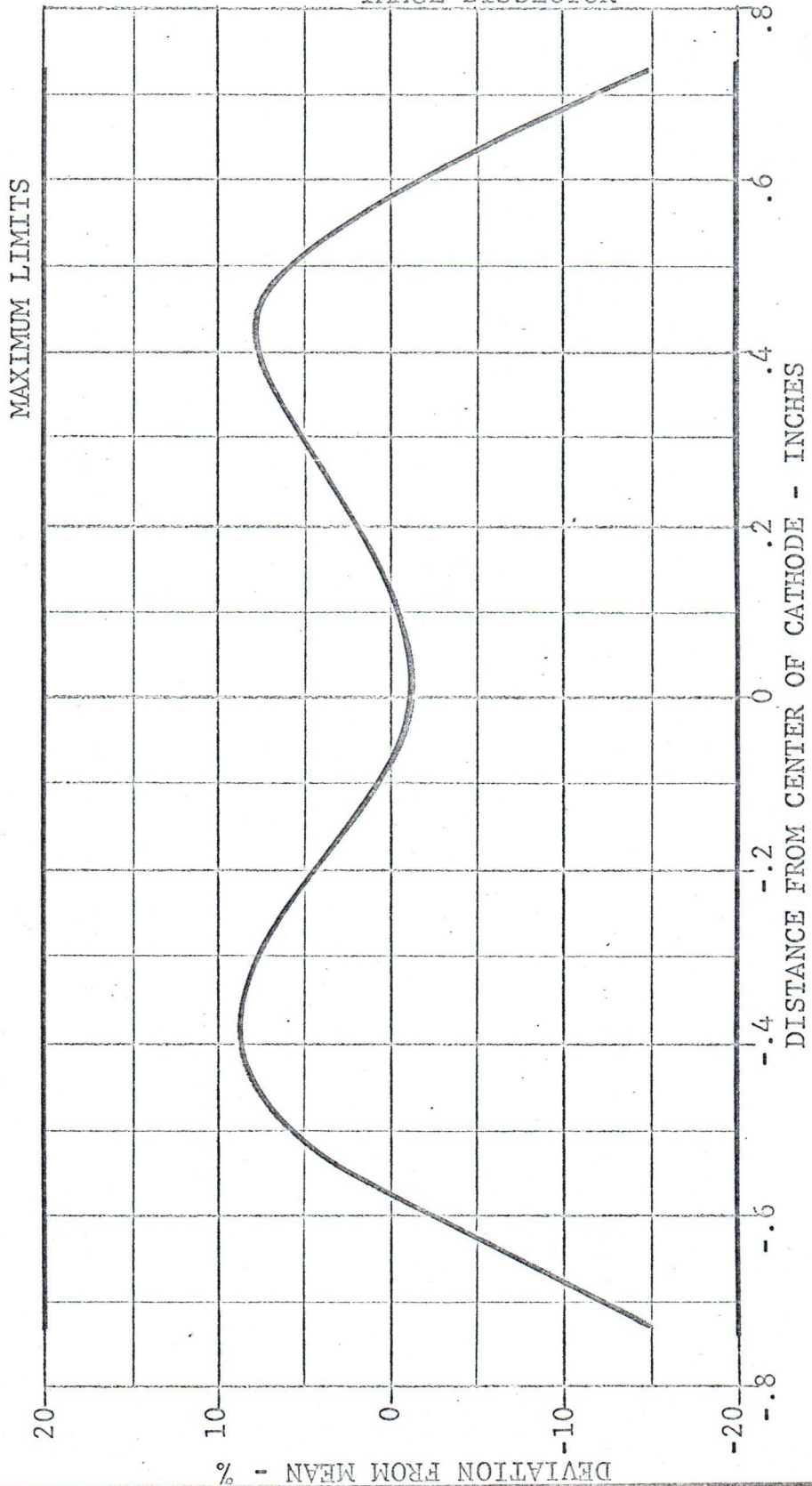


Figure 3: Typical Image Dissector Anode Uniformity

APP'VD. ENG. <i>JFK</i>	DATE <i>2/20/69</i>	APP'VD. PROD.	DATE	CLASSIFICATION EXPERIMENTAL SPECIFICATION
APP'VD. MARKTG. <i>W. G. W. Smith</i>	DATE <i>12/19/68</i>	ORIG. BY	DATE	EMR SPEC. NO.

PRODUCT SPECIFICATION - MODEL 549-4276A Rev. B
IMAGE DISSECTOR

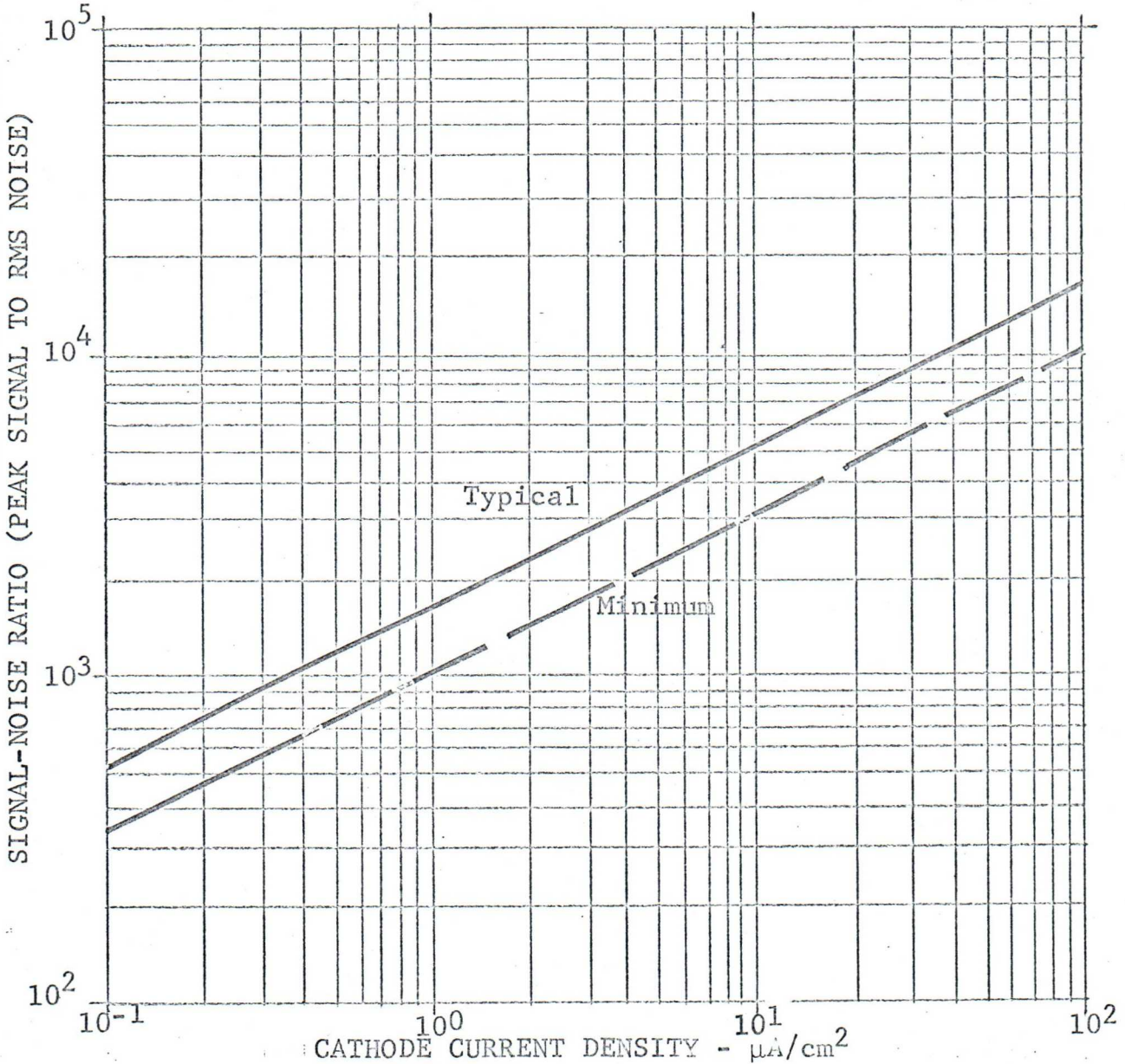


Figure 4: Image Dissector Signal to Noise Ratio for A Bandwidth of 1 Hz.

Aperture Diameter = .00075 in. for different bandwidth (Δf) multiply signal/noise by $\frac{1}{\sqrt{\Delta f}}$

APP'VD. ENG. <i>[Signature]</i>	DATE 9/30/69	APP'VD. PROD.	DATE	CLASSIFICATION EXPERIMENTAL SPECIFICATION
APP'VD. MKTG. <i>[Signature]</i>	DATE 12/19/69	ORIG. BY	DATE	EMR SPEC. NO.

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EMR DIVISION OF WESTON INSTRUMENTS, INC • A SCHLUMBERGER COMPANY

PRODUCT SPECIFICATION - MODEL 549-4276A Rev. B
IMAGE DISSECTOR

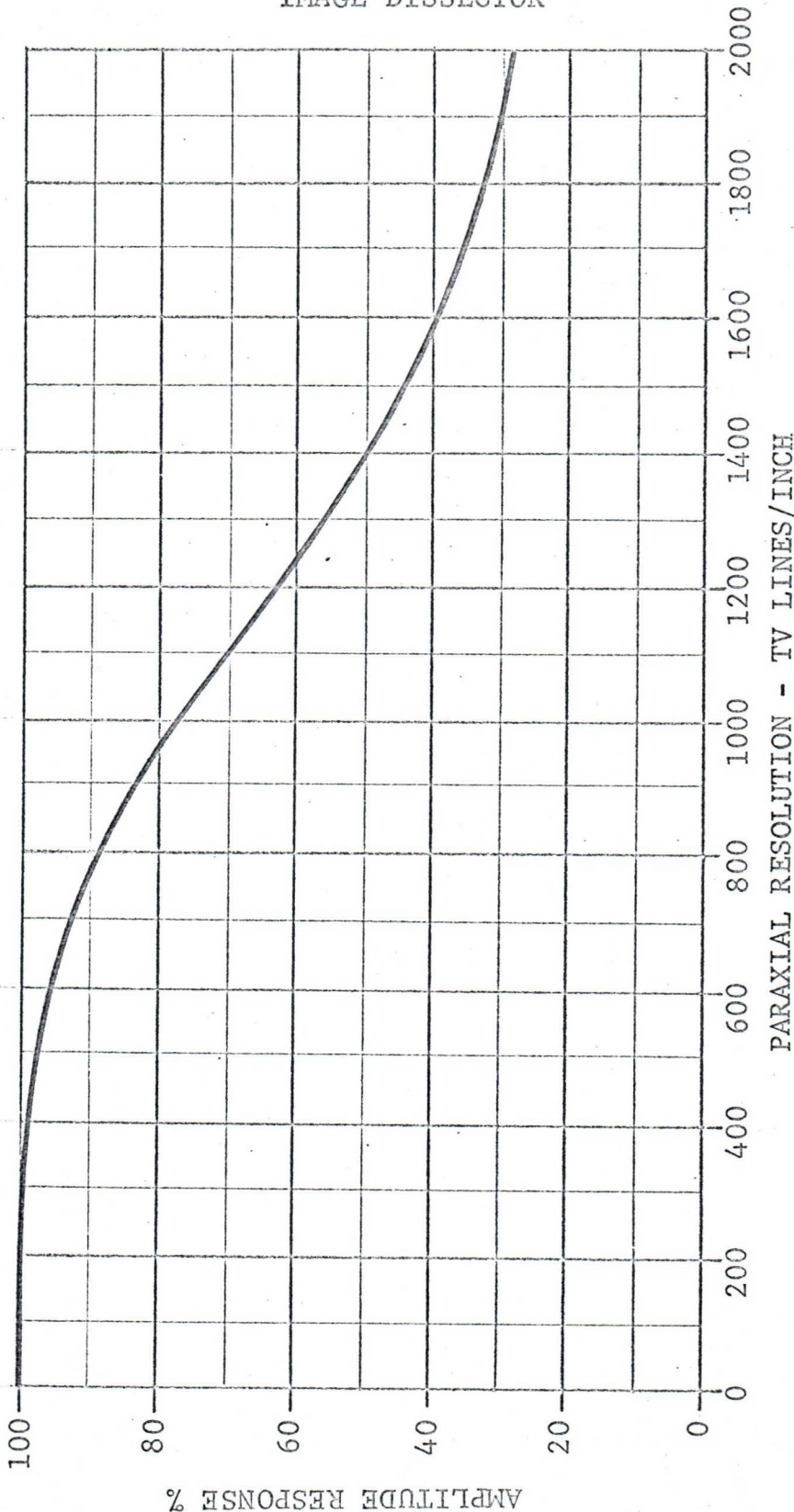


Figure 5: Typical Image Dissector Paraxial Resolution Characteristics
(Round aperture .00075 in. diameter)

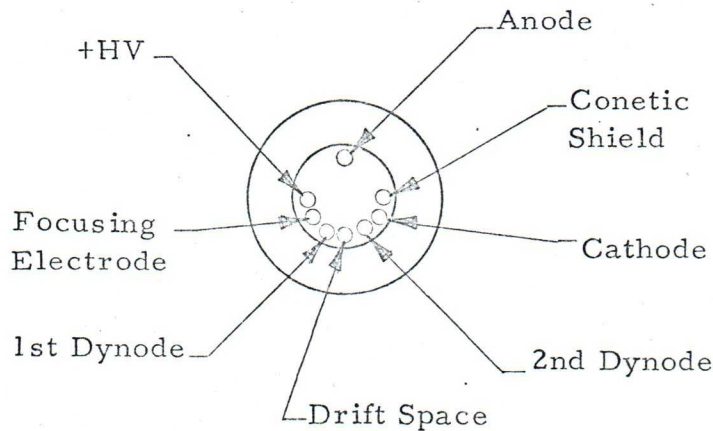
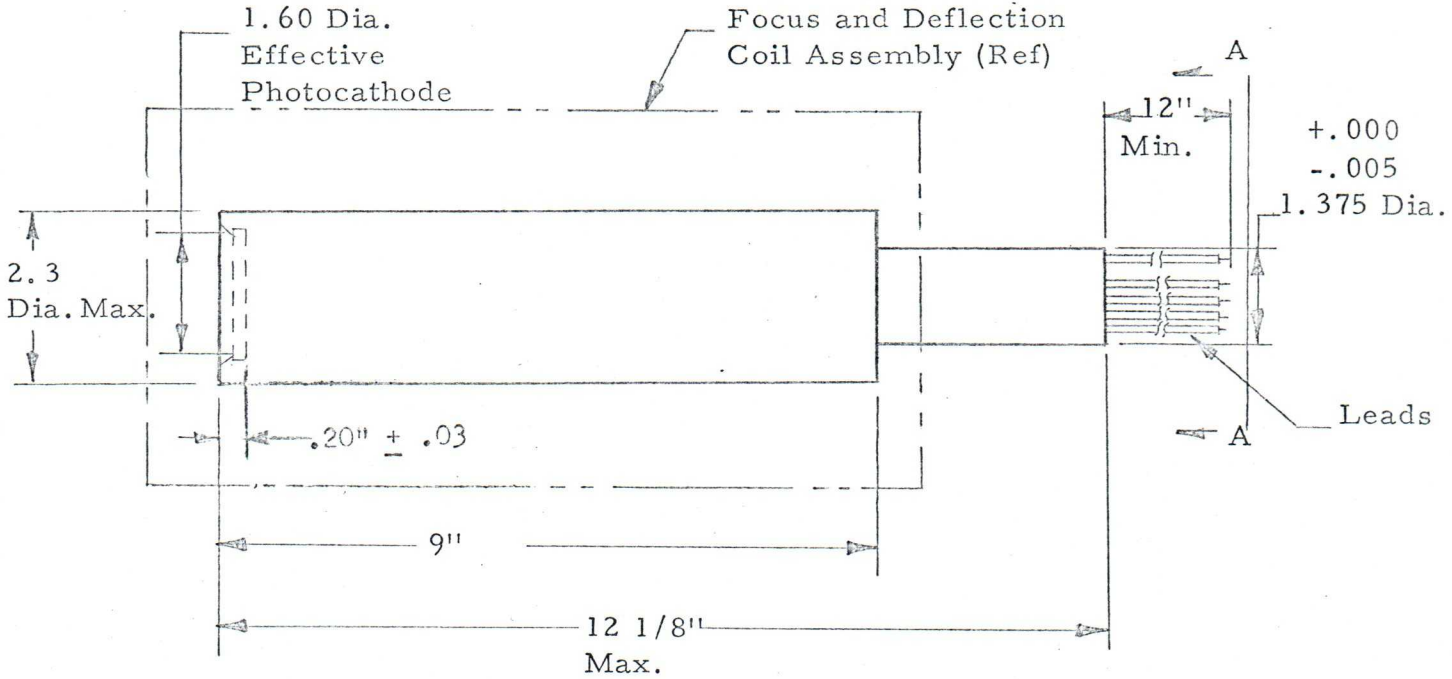
APP'VD. ENG. <i>[Signature]</i>	DATE 11/20/69	APP'VD. PROD.	DATE	CLASSIFICATION EXPERIMENTAL SPECIFICATION
APP'VD. MARKTG. <i>[Signature]</i>	DATE 12/19/69	ORIG. BY	DATE	EMR SPEC. NO.



EMR DIVISION OF WESTON INSTRUMENTS, INC • A SCHLUMBERGER COMPANY

PRODUCT SPECIFICATION - MODEL 549-4276A Rev. B

IMAGE DISSECTOR



VIEW A-A

Figure 6: Outline Drawing

APP'VD. ENG. <i>JES</i>	DATE 12-19-69	APP'VD. PROD.	DATE	CLASSIFICATION Experimental Specification
APP'VD. MKTG. <i>W.G. White</i>	DATE 12/19/69	ORIG. BY	DATE	EMR SPEC. NO.

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EMR DIVISION OF WESTON INSTRUMENTS, INC • A SCHLUMBERGER COMPANY

PRODUCT SPECIFICATION - MODEL 549-4276A Rev. B
IMAGE DISSECTOR

- Notes:
1. Resistor values equal throughout
(See POA for values)
 2. C1, C2, & C3 = .001 μ f, 500 V capacitors.

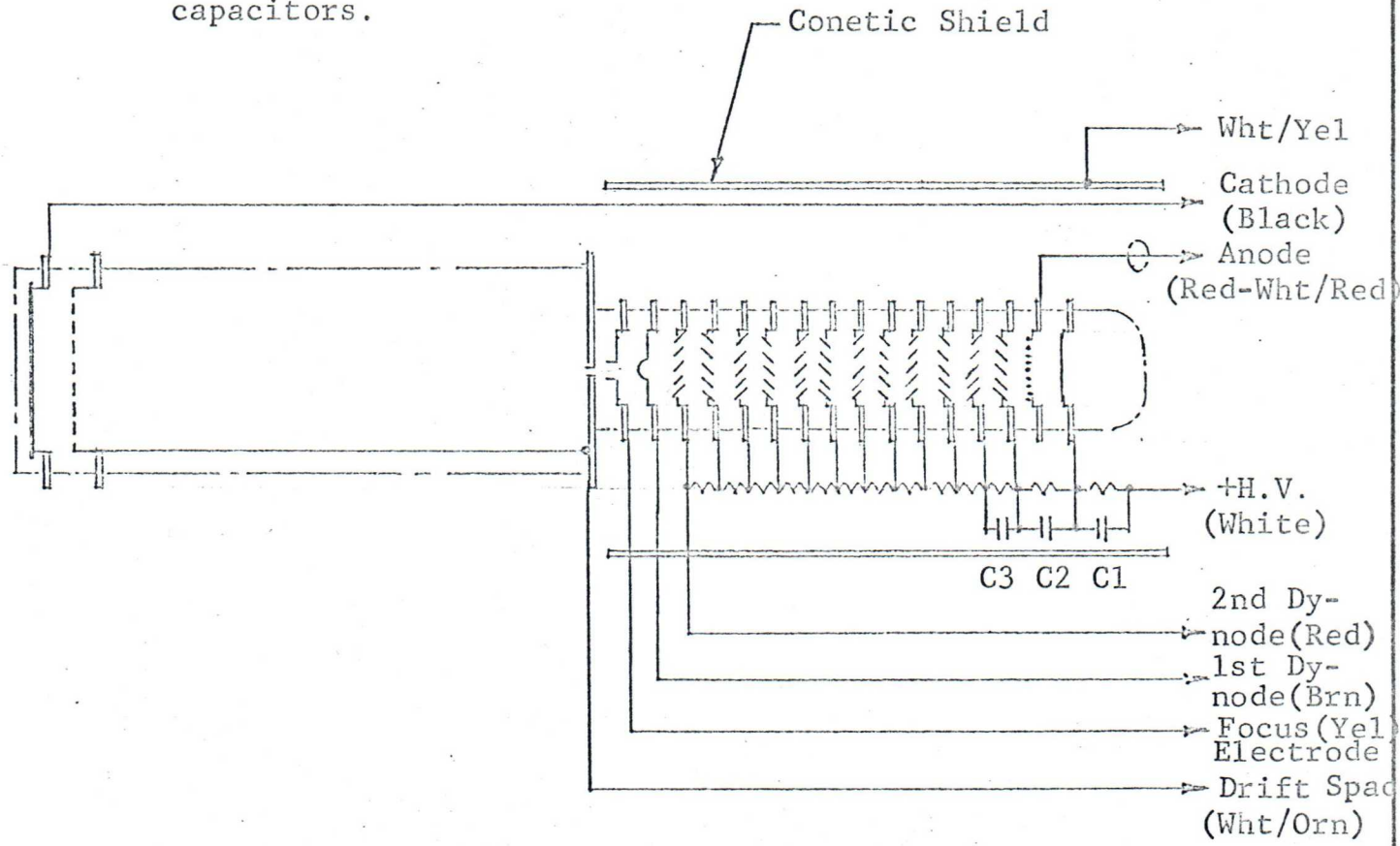


Figure 7:
SCHEMATIC

Typical Operating Voltages

1. Cathode	-2800 V
2. Drift Space	-2290 V
3. Focus Electrode	-2320 V
4. 1st Dynode	-2290 V
5. 2nd Dynode	-2070 V
6. +HV	0 V
7. Anode	Signal
8. Conetic Shield	Ground

EMR DIVISION OF WESTON INSTRUMENTS, INC • A SCHLUMBERGER COMPANY

PRODUCT SPECIFICATION - MODEL 576E-01-00 Rev. A

IMAGE INTENSIFIER - EXPERIMENTAL SPECIFICATION
SEPTEMBER 1968

I. PHYSICAL CHARACTERISTICS

Focusing	Magnetic
Maximum overall length (unpotted)	2.730 inches max.
Typical weight (including permanent magnet)	3.0 kilograms
Window material	7056 glass
Cathode sensitive area	40 mm diameter
Cathode type	Semitransparent trialkali
Output phosphor	P-11 or P-20
Output phosphor area	40 mm diameter-fiberoptic plate

II. PHOTOCATHODE CHARACTERISTICS

Note	Minimum	Typical	Maximum	Units
	15	20		%
		5		%
	.050	.068		A/W
		.025		A/W

III. IMAGE TUBE CHARACTERISTICS

Magnification (Paraxial)	1	0.9	1.0	1.2	
Non-linearity distortion (out to 17 mm radius)	1		8		%
Operation voltage			15	20	KV
For P-11 Phosphor					
Wavelength of maximum output			4600		Å
Resolution (Paraxial)	1	64	81		lp/mm
Photon Gain at 4100 Å	2		72		
Radiant Gain at 4100 Å	2		57		

EMR DIVISION OF WESTON INSTRUMENTS, INC • A SCHLUMBERGER COMPANY

PRODUCT SPECIFICATION - MODEL 576E-01-00 Rev. A

IMAGE INTENSIFIER - EXPERIMENTAL SPECIFICATION
SEPTEMBER 1968

For P-20 Phosphor
Wavelength of maximum output
Resolution (Paraxial)
Photon Gain at 4100 Å
Radiant Gain at 4100 Å

Note	Minimum	Typical	Maximum	Units
		5600		Å
1	64	81		lp/mm
2		96		
2		81		
			20	KV
			85	°C

IV. MAXIMUM RATINGS

Supply voltage
Ambient temperature

V. ENVIRONMENTAL

Shock
Vibration
Temperature

40 g, 11 millisecond duration
20 g, 20 to 3,000 cps
-55°C to 85°C

VI. PACKAGING

Normally packaged in an epoxy fiberglass housing.

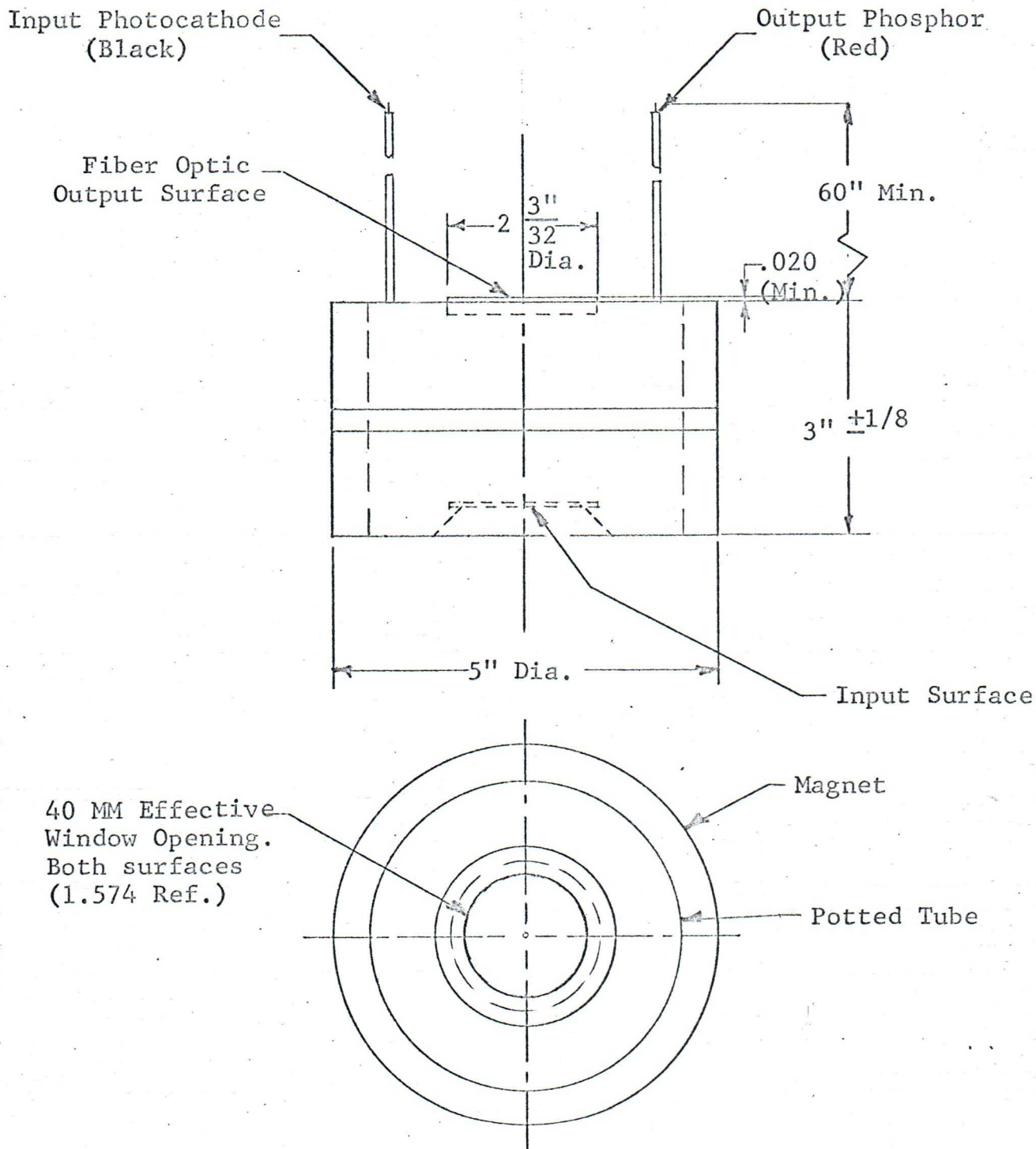
- NOTES: 1. Measurements made using 4100 Å input radiation.
2. Calculated for input radiation of stated wavelength and typical operating voltage.

APP'VD. ENG. <i>[Signature]</i>	DATE 9/17/68	APP'VD. PROD.	DATE —	CLASSIFICATION Experimental Specification
APP'VD. MARKTG. <i>[Signature]</i>	DATE 9/19/68	ORIG. BY <i>[Signature]</i>	DATE 9/17/68	EMR SPEC. NO.

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EMR DIVISION OF WESTON INSTRUMENTS, INC • A SCHLUMBERGER COMPANY

PRODUCT SPECIFICATION - MODEL 576E-01-00 Rev. A
IMAGE INTENSIFIER - EXPERIMENTAL SPECIFICATION



APP'VD. ENG. <i>[Signature]</i>	DATE 11/11/69	APP'VD. PROD.	DATE	CLASSIFICATION EXPERIMENTAL SPECIFICATION
APP'VD. MKTG. <i>[Signature]</i>	DATE 11/11/69	ORIG. BY RET	DATE 11/11/69	EMR SPEC. NO.
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PRODUCT SPECIFICATION - MODEL 577E-00-00 Rev. D

IMAGE INTENSIFIER

I. PHYSICAL CHARACTERISTICS

Maximum overall length (unpotted)	2.51 inches
Typical weight (including permanent magnet)	3.0 kilograms
Window material	High resolution fiber optics
Cathode sensitive area	1 in. diameter (area = 0.785 sq. in.)
Cathode type	Semitransparent multialkali
Output phosphor	P-11 or P-20
Output phosphor area	1 in. diameter (area = 0.785 sq. in.)
Focusing	Magnetic

II. PHOTOCATHODE CHARACTERISTICS

Quantum efficiency (Q) @ 4100 Å	8	13		%
Quantum efficiency (Q) @ 6300 Å		2		%
Cathode radiant sensitivity (σ_k) @ 4100 Å	.026	.043		A/W
Cathode radiant sensitivity (σ_k) @ 6300 Å		.010		A/W

III. IMAGE TUBE CHARACTERISTICS

Magnification (Paraxial)	1	0.9	1.0	1.1	
Non-linearity distortion (out to 11 mm radius)	1		5		%
Operation voltage For P-11 Phosphor			15	20	KV
Wavelength of maximum output			4600		Å
Resolution (Paraxial)	1	50	55		lp/mm
Photon Gain @ 4100 Å	2	30	45		
Radiant Gain @ 4100 Å		26	39		
For P-20 Phosphor					
Wavelength of maximum output			5600		Å
Resolution (Paraxial)	1	50	55		lp/mm
Photon Gain @ 4100 Å	2	48	72		
Radiant Gain @ 4100 Å		36	54		

EMR DIVISION OF WESTON INSTRUMENTS, INC · A SCHLUMBERGER COMPANY

PRODUCT SPECIFICATION - MODEL 577E-00-00 Rev. D

IMAGE INTENSIFIER

IV. MAXIMUM RATINGS

Supply voltage
Ambient temperature

Note	Minimum	Typical	Maximum	Units
		18	20	KV
			85	°C

V. ENVIRONMENTAL

Shock
Vibration
Temperature

40 g, 11 millisecond duration
20 g, 20 to 3,000 cps
-55°C to 85°C

VI. PACKAGING

Normally packaged in an epoxy fiberglass housing. See Figure 1.

- NOTES: 1. Measurements made using 4100 Å input radiation.
2. Calculated for input radiation of stated wavelength and typical operating voltage.

APPVD. ENG. <i>JED</i>	DATE 11/19/62	APPVD. PROD.	DATE	CLASSIFICATION EXPERIMENTAL SPECIFICATION
APPVD. MARKTG. <i>men</i>	DATE 11/19/62	ORIG. BY <i>KET</i>	DATE 11/19/62	EMR SPEC. NO.

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EMR DIVISION OF WESTON INSTRUMENTS, INC • A SCHLUMBERGER COMPANY

PRODUCT SPECIFICATION - MODEL 577E-00-00 Rev. D
IMAGE INTENSIFIER

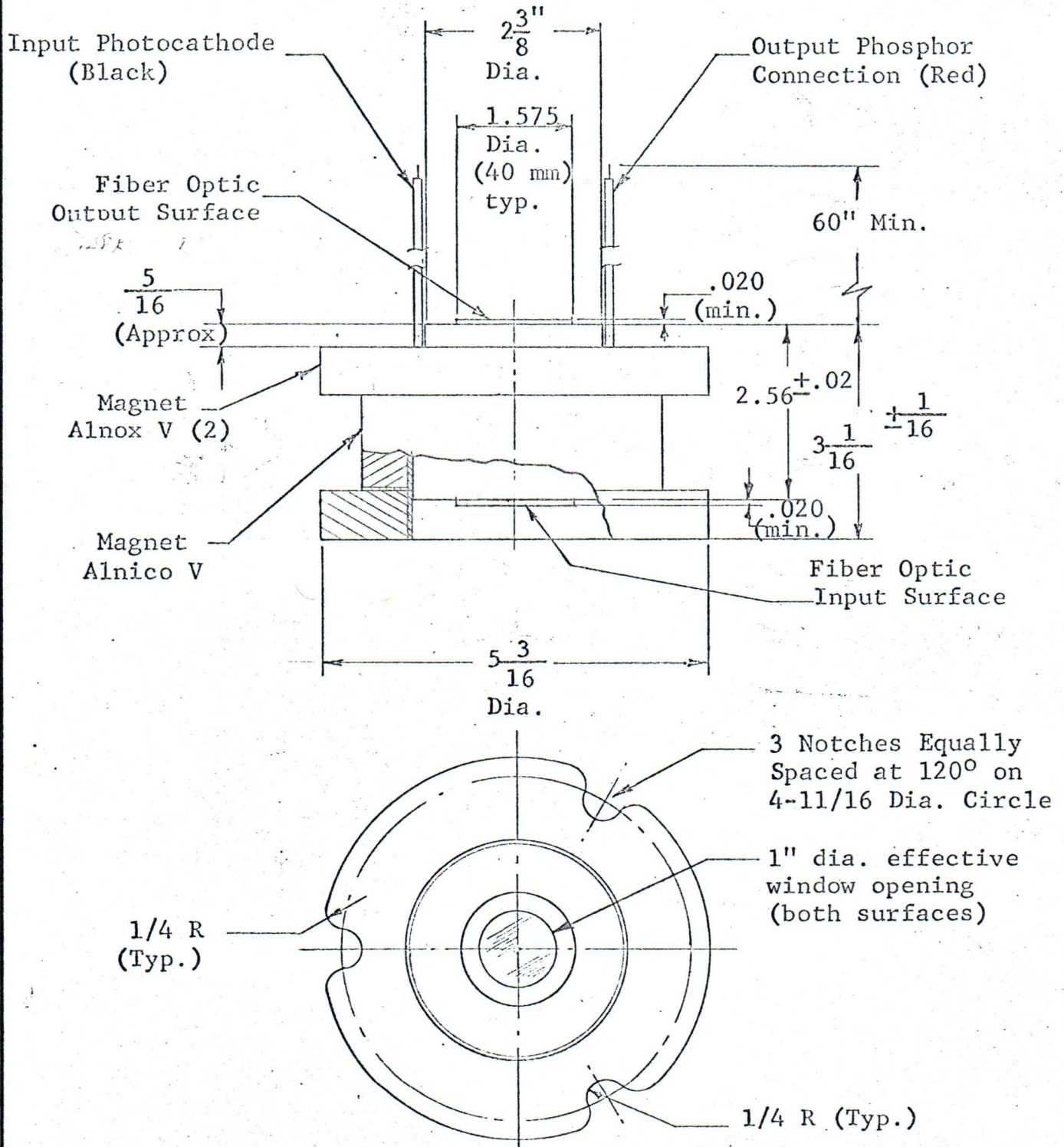


FIGURE 1
OUTLINE DRAWING

APP'VD. ENG. <i>[Signature]</i>	DATE 10/10/69	APP'VD. PROD.	DATE	CLASSIFICATION EXPERIMENTAL SPECIFICATION
APP'VD. MARKTG. <i>[Signature]</i>	DATE 10/16/69	ORIG. BY <i>[Signature]</i>	DATE 13 OCT 1969	EMR SPEC. NO.
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EMR DIVISION OF WESTON INSTRUMENTS, INC • A SCHLUMBERGER COMPANY

PRODUCT SPECIFICATION - MODEL 577E-01-00 Rev. D

IMAGE INTENSIFIER

I. PHYSICAL CHARACTERISTICS

Maximum overall length (unpotted) 2.51 inches
 Typical weight (Including permanent magnet) 3.0 kilograms
 Window material: 7056 glass
 Cathode sensitive area 1 in. diameter (area = 0.785 sq. in.)
 Cathode type Semitransparent trialkali
 Output phosphor P-11 or P-20
 Output phosphor area 1 in. diameter (area = 0.785 sq. in.)
 Focusing Magnetic

II. PHOTOCATHODE CHARACTERISTICS

Note	Minimum	Typical	Maximum	Units
	8	13		%
		2		%
	.026	.043		A/W
		.010		A/W

III. IMAGE TUBE CHARACTERISTICS

Magnification (Paraxial)	1	0.9	1.0	1.1	
Non-linearity distortion (Out to 11 mm radius)	1		5		%
Operation voltage			15	20	KV
For P-11 Phosphor					
Wavelength of maximum output			4600		Å
Resolution (Paraxial)	1	70	80		lp/mm
Photon Gain @ 4100 Å	2		30		
Radiant Gain at 4100 Å	2		26		
For P-20 Phosphor					
Wavelength of maximum output			5600		Å
Resolution (Paraxial)	1	70	80		lp/mm
Photon Gain at 4100 Å	2		48		
Radiant Gain at 4100 Å	2		36		

APP'VD. ENG. JED	DATE 11/19/68	APP'VD. PROD.	DATE	CLASSIFICATION EXPERIMENTAL SPECIFICATION
APP'VD. MARKTG. 9/2/67	DATE 11/19/68	ORIG. BY R24	DATE 11/19/68	EMR SPEC. NO.
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EMR DIVISION OF WESTON INSTRUMENTS, INC • A SCHLUMBERGER COMPANY

PRODUCT SPECIFICATION - MODEL 577E-01-00 Rev. D

IMAGE INTENSIFIER

IV. MAXIMUM RATINGS

Supply voltage
Ambient temperature

Note	Minimum	Typical	Maximum	Units
			20	KV
			55	°C

V. ENVIRONMENTAL

Shock
Vibration
Temperature

40 g, 11 millisecond duration
20 g, 20 to 3,000 cps
-55°C to 55°C

VI. PACKAGING

Normally packaged in an epoxy fiberglass housing. See Figure 1

- NOTES: 1. Measurements made using 4100 Å input radiation.
2. Calculated for input radiation of stated wavelength and typical operating voltage.

APP'VD. ENG. <i>JEN</i>	DATE 11/19/68	APP'VD. PROD.	DATE	CLASSIFICATION EXPERIMENTAL SPECIFICATION
APP'VD. MARKTG. <i>JEN</i>	DATE 11/19/68	ORIG. BY <i>KLJ</i>	DATE 11/19/68	EMR SPEC. NO.
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PRODUCT SPECIFICATION - MODEL 577E-01-00 Rev. D

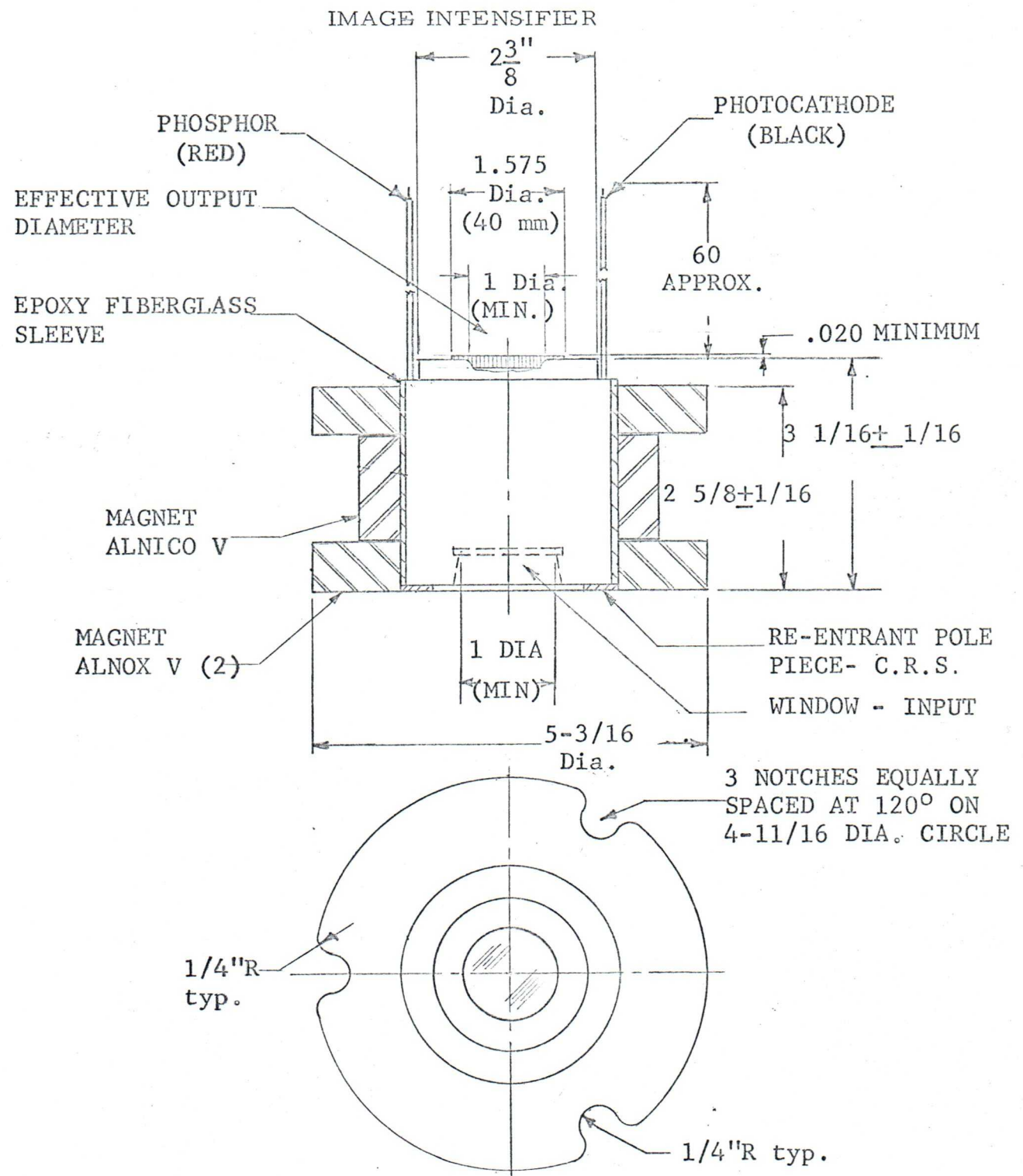


FIGURE 1
OUTLINE

NOTE: ALL MEASUREMENTS ARE IN INCHES

APP'VD. ENG. <i>[Signature]</i>	DATE 11-12-68	APP'VD. PROD.	DATE	CLASSIFICATION EXPERIMENTAL SPECIFICATION
APP'VD. MARKTG. <i>[Signature]</i>	DATE 11/15/68	ORIG. BY <i>[Signature]</i>	DATE 11 NOV 68	EMR SPEC. NO.
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EMR DIVISION OF WESTON INSTRUMENTS, INC · A SCHLUMBERGER COMPANY

PRODUCT SPECIFICATION - MODEL 577G-08-00 Rev. A
 UV IMAGE CONVERTER

I. PHYSICAL CHARACTERISTICS

Focusing:	Magnetic
Maximum overall length (unpotted):	2.7 inches
Typical weight (including permanent magnet):	3 kilograms
Window material:	
Input	Selected ultraviolet quality Lithium Fluoride
Output	Fiber optic nominal 6 μ Fiber
Cathode sensitive area:	1 in. dia. (area = 0.785 sq. in.)
Cathode type:	Semitransparent Cesium Iodide
Output phosphor:	P-11 or P-20
Output phosphor area:	1 in. dia. (area = 0.785 sq. in.)

II. PHOTOCATHODE CHARACTERISTICS

Quantum efficiency (Q) at
 1216 Å
 2537 Å
 Cathode radiant sensitivity (σ_k) at 1216 Å

Note	Minimum	Typical	Maximum	Units
	5.0	7.0		See Fig.1 %
		.004	.01	%
	.005	.007		A/W
1	0.9	1.0	1.1	
1		5		%
		20	25	KV
		4600		Å
2	70	80		1p/mm
3		26		
		7		
		5600		Å
2	70	80		1p/mm
3		42		
		10		

III. IMAGE TUBE CHARACTERISTICS

Magnification (Paraxial)
 Non-linearity Distortion (out to 11 mm radius)
 Operation voltage
 For P-11 Phosphor
 Wavelength of maximum output
 Resolution (Paraxial)
 Photon Gain at 1216 Å
 Radiant Gain at 1216 Å
 For P-20 Phosphor
 Wavelength of maximum output
 Resolution (Paraxial)
 Photon Gain at 1216 Å
 Radiant Gain at 1216 Å



EMR DIVISION OF WESTON INSTRUMENTS, INC · A SCHLUMBERGER COMPANY

PRODUCT SPECIFICATION - MODEL 577G-08-00 Rev. A
UV IMAGE CONVERTER

IV. MAXIMUM RATINGS

Supply voltage
Ambient temperature

Note	Minimum	Typical	Maximum	Units
		20	25	KV
			100	°C

V. ENVIRONMENTAL

Shock: 40 g, 11 millisecond duration
Vibration: 20 g, 20 to 3,000 cps
Temperature: -55°C to 100°C

VI. PACKAGING (See Fig. 2)

Normally packaged in an epoxy fiber glass housing.

- NOTES:
1. Measurements made using 2537 Å input radiation.
 2. This parameter is normally not measured.
 3. Calculated for input radiation of stated wavelength and typical operating voltage.

APP'VD. ENG. <i>[Signature]</i>	DATE 6/17/69	APP'VD. PROD.	DATE	CLASSIFICATION PRELIMINARY SPECIFICATION
APP'VD. MARKTG. <i>[Signature]</i>	DATE 7/10/69	ORIG. BY <i>[Signature]</i>	DATE 6/17/69	EMR SPEC. NO.
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EMR DIVISION OF WESTON INSTRUMENTS, INC • A SCHLUMBERGER COMPANY

PRODUCT SPECIFICATION - MODEL 577G-08-00 Rev. A
IMAGE CONVERTER

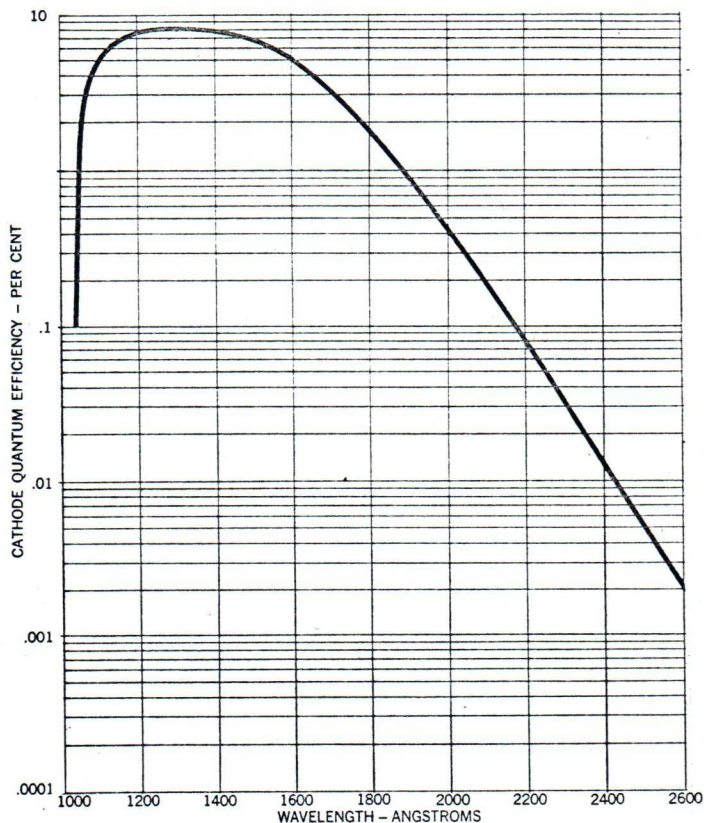


FIGURE 1. TYPICAL SPECTRAL RESPONSE CHARACTERISTICS

APP'VD. ENG. <i>EDL</i>	DATE 4/24/69	APP'VD. PROD.	DATE	CLASSIFICATION PRELIMINARY SPECIFICATION
APP'VD. MARKTG. <i>M.G. White</i>	DATE 7/10/69	ORIG. BY <i>KEG</i>	DATE 6/24/69	EMR SPEC. NO.
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EMR DIVISION OF WESTON INSTRUMENTS, INC • A SCHLUMBERGER COMPANY

PRODUCT SPECIFICATION - MODEL 577G-08-00 Rev. A
UV IMAGE CONVERTER

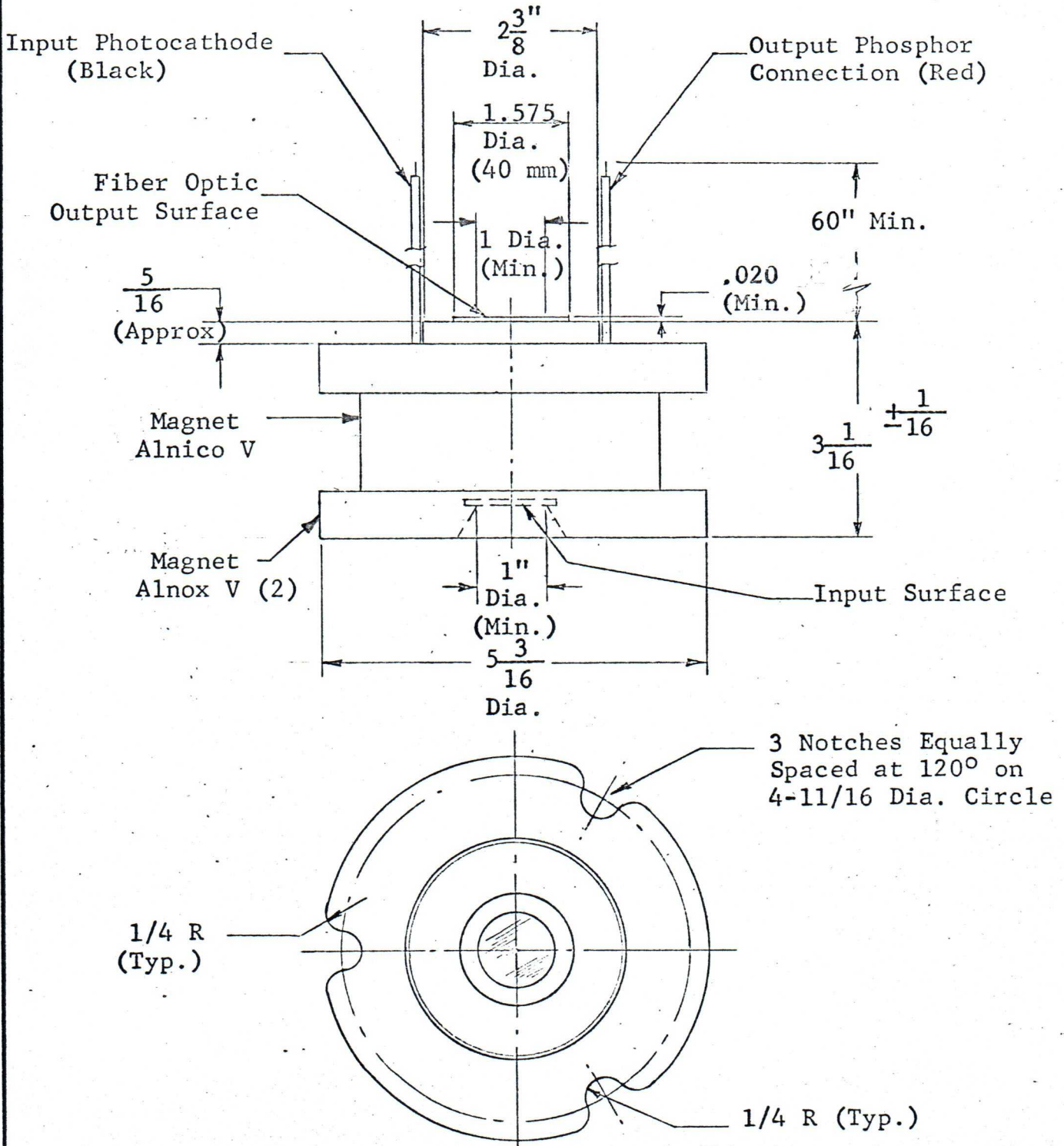


FIGURE 2 - Outline

APP'VD. ENG. <i>JED</i>	DATE 7/1/69	APP'VD. PROD.	DATE	CLASSIFICATION PRELIMINARY SPECIFICATION
APP'VD. MARKTG. <i>W. G. W...</i>	DATE 7/10/69	ORIG. BY <i>...</i>	DATE 7/1/69	EMR SPEC. NO.
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