UNITED ELECTRONICS

TYPE 4PR60B

NEW RADIAL-BEAM PULSE TETRODE

FEATURES

- EXCEPTIONALLY HIGH PEAK EMISSION
- High Grid and Screen Dissipation Capability
- Ruggedized Components
- Resists Shock and Vibration

United's newly designed 4PR60B high vacuum tetrode replaces the 4PR60A, 715C and the 5D21. It is intended for use in pulse modulator circuitry.

Manufactured under United's reliability program, the 4PR60B uses ruggedized components to provide longer life and greater resistance to shock and vibration.

GENERAL CHARACTERISTICS

ELECTRICAL

Cathode: Oxide-coated, Unipotential

Heater Voltage	26.0	volts
Heater Current	2.25	amperes
Minimum Heating Time	3	minutes

Direct Interelectrode Capacitances (Average)

Grid-Plate (without shielding)	0.3	$\mu\mu$f
Input	43.0	$\mu\mu$f
Output	9.0	$\mu\mu$f

MECHANICAL

Minimum Shock Test	200g
Base	Fits E. F. Johnson Co. Socket Number 122-234 or equivalent
Mounting Position	Any
Cooling	Radiation and Convection

Maximum Over-all Dimensions

Length	6 inches
Diameter	3 1/16 inches
Net Weight	10 ounces

RATINGS

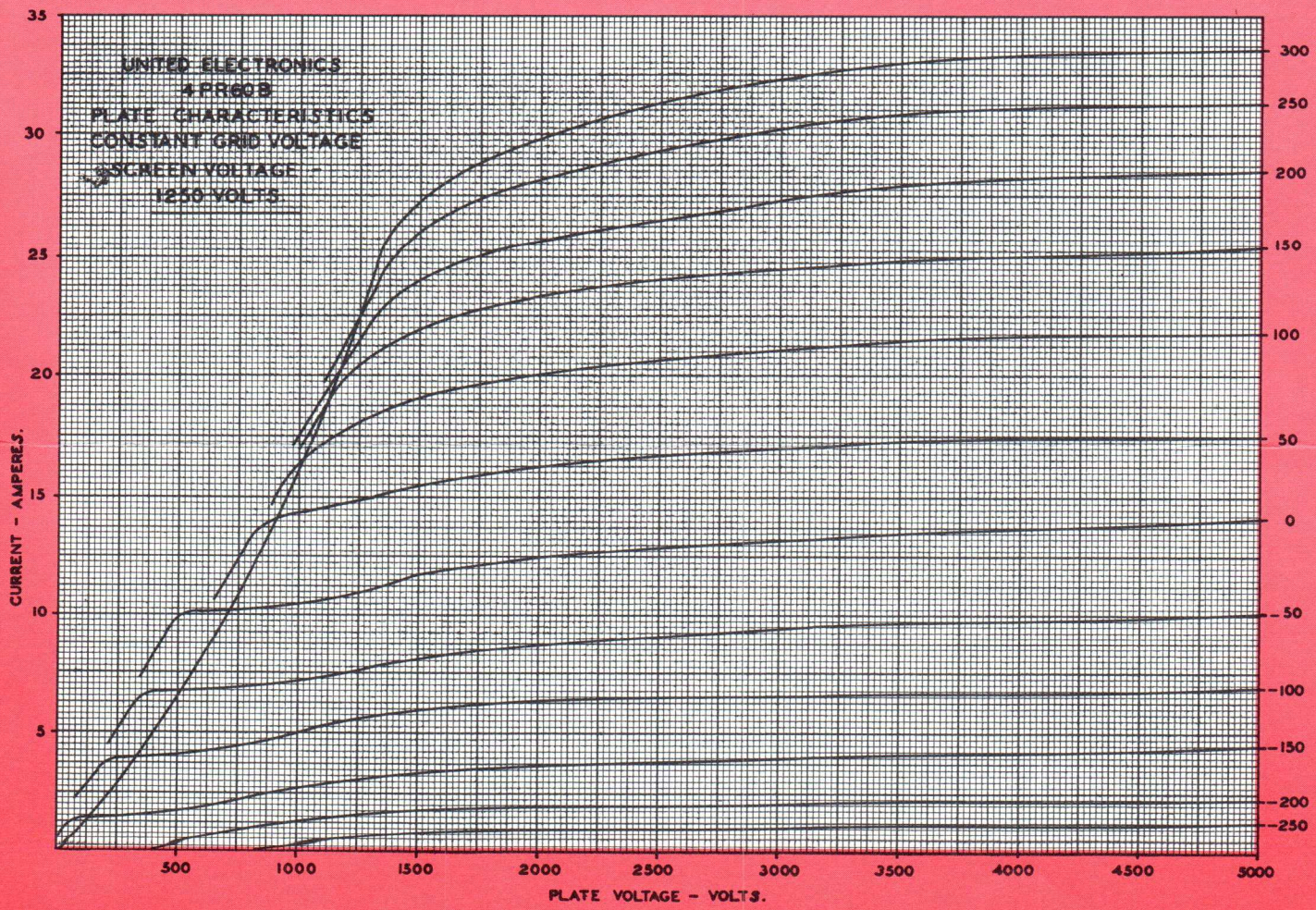
MAXIMUM RATINGS
Pulse Modulator Service

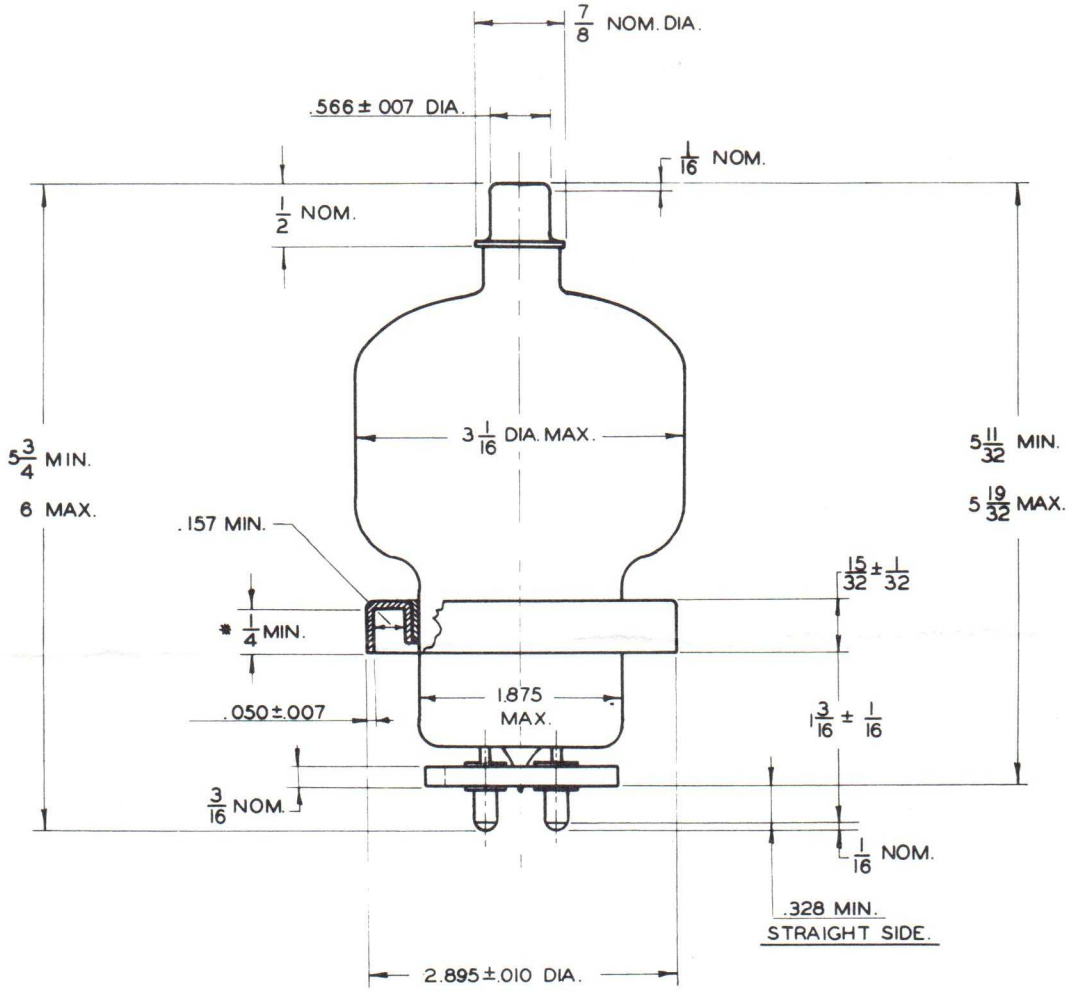
D-C PLATE VOLTAGE	20	MAX. KILOVOLTS
D-C SCREEN VOLTAGE[1]	1.5	MAX. KILOVOLTS
D-C GRID VOLTAGE	—1.0	MAX. KILOVOLT
PEAK POSITIVE GRID VOLTAGE	300	MAX. VOLTS
PEAK PLATE CURRENT	18	MAX. AMPERES
PEAK POSITIVE PLATE VOLTAGE	25	MAX. KILOVOLTS
PLATE DISSIPATION	60	MAX. WATTS
SCREEN DISSIPATION	8	MAX. WATTS
SEAL TEMPERATURES	200	MAX. DEG. C

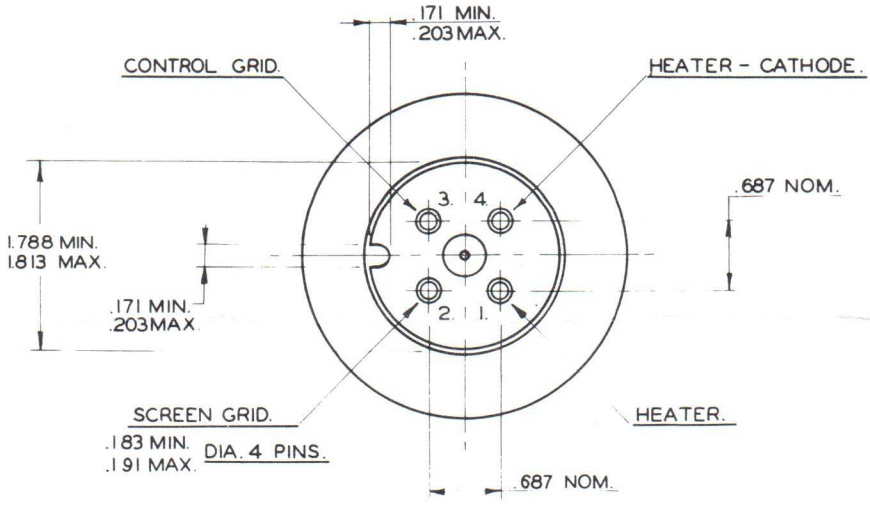
TYPICAL OPERATION
Pulse Modulator

D-C Plate Voltage	15.8	20.0	kilovolts
Pulse Plate Current	14.0	16.0	amperes
D-C Screen Voltage	1.25	1.25	kilovolts
Pulse Screen Current	4.0	3.0	amperes
D-C Grid Voltage	-600	-600	volts
Pulse Grid Current	1.1	1.1	amperes
Pulse Positive Grid Voltage	100	100	volts
Duty	.001	.001	
Pulse Length	2	2	μsec
Peak Positive Plate Voltage	25	25	kilovolts
Peak Plate Current	16	18	amperes
Pulse Power Input	220	320	kilowatts
Pulse Power Output	210	305	kilowatts
Plate Output Voltage	15.0	19.0	kilovolts

[1]Screen grid series protective resistance shall be 20,000 ohms, minimum.





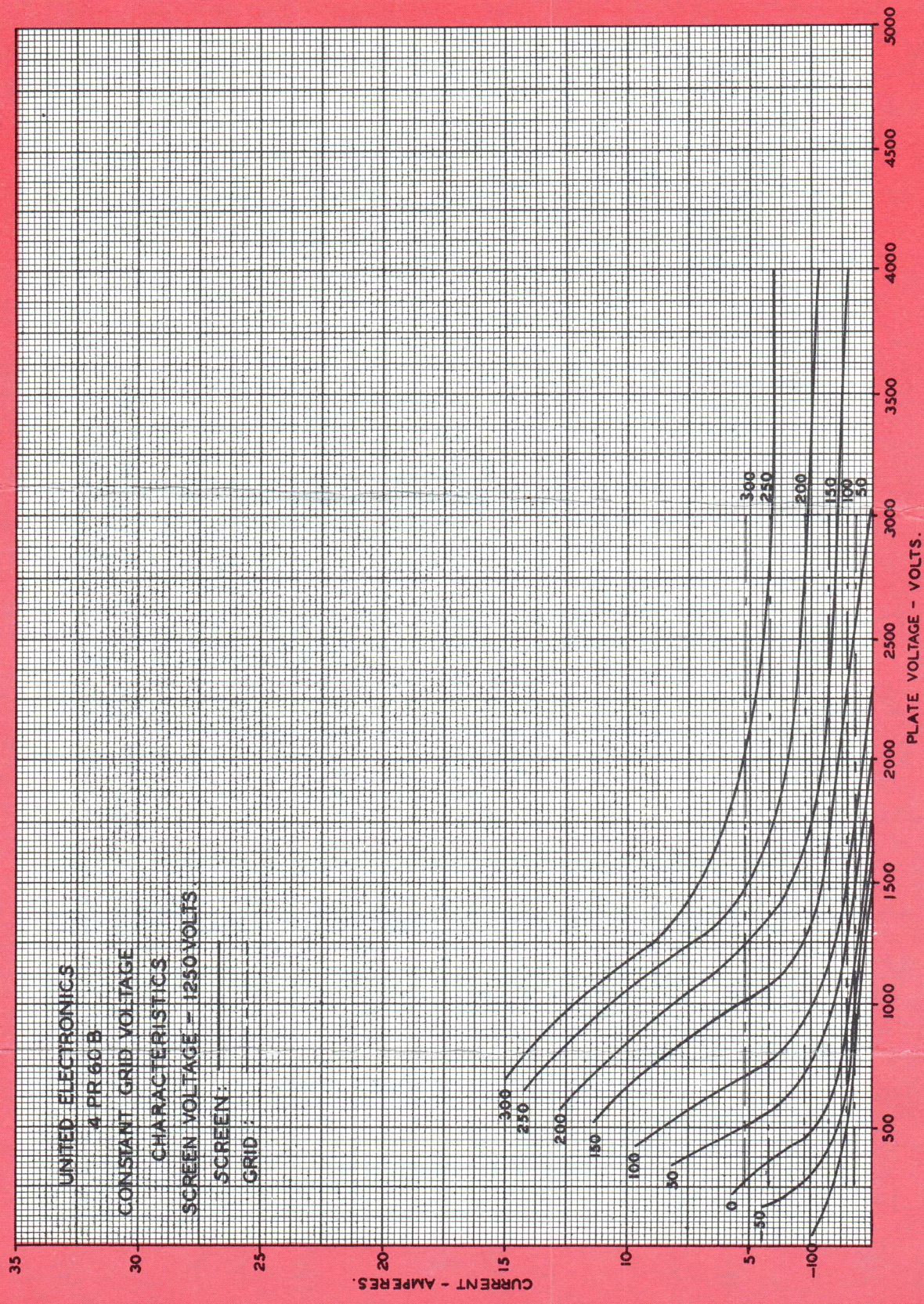


BOTTOM VIEW.

DIMENSIONS IN INCHES.

THE BASE SHALL BE CAPABLE OF ENTERING A GAUGE $\frac{1}{4}$" THICK HAVING 4 HOLES WHOSE DIA'S ARE .214" AND WHICH ARE LOCATED ON $\frac{11}{16}$" CENTERS AND A CENTER HOLE OF .250" DIA.

*CYLINDRICAL SURFACE AVAILABLE FOR CLAMPING.



UNITED ELECTRONICS COMPANY

A SUBSIDIARY OF LTV LING-TEMCO-VOUGHT, INC.

42 SPRING STREET • NEWARK 4, NEW JERSEY • HU 4-6300

CABLE : CALVERTRON, N. Y.
AREA CODE: 212

BY PRECISION TO PERFECTION

CALVERT ELECTRONICS, INC. ● 220 EAST 23RD STREET, NEW YORK 10, N. Y. OREGON 9-1340

UNITED ELECTRONICS
42 SPRING STREET
NEWARK, NEW JERSEY

ATT: MISS ANN DELANO

Gentlemen:

Calvert Electronics Inc., is the U.S.A. representative for English Electric Valve Co. Ltd. English Electric is interested in initiating a free exchange of published Electron Tube data between themselves and your company. They offer 3 leather bound volumes of tube data with up to date service plus regular mailings of all new tube products and advance press releases in free exchange for your equivalent. The 3 volume service in itself is normally a $15.00 item.

They have one of the largest assortments of Special Purpose Electron Tubes with over 350 standard types of:

Rectifiers	Klystrons
Power Triodes & Tetrodes	Magnetrons
Travelling Wave Tubes	Thyratrons
Backward Wave Oscillators	Vacuum Capacitors
Storage Tubes	Voltage Regulators
Image Intensifiers	Image Orthicons

English Electric has asked us to contact you on their behalf. If you agree to this free exchange, we would appreciate your writing directly to: English Electric Valve Co. Ltd., Technical Publications Dept., Waterhouse Lane, Chelmsford, England.
Attention: Mr. F. Langford-Smith.

In your letter please indicate the name of the person to whom the data books should be sent.

Thanking you for your kind cooperation, we remain.

Very truly yours,

Bernard Fudim
BF/bb

(2)

1958

Engineering Data and Ratings

UNITED ELECTRONICS

CLIPPER DIODE • RECTIFIER TUBES

HIGH VACUUM... HIGH VOLTAGE INTERNAL ANODE TYPES

All of the half-wave rectifier and clipper diodes described herein employ anodes of specially processed electronic graphite. For over 22 years UNITED ELECTRONICS COMPANY has led the Industry in the design and production of graphite anode tubes which are specially meritorious in handling maximum heat dissipation in convection cooled internal anode design. Since graphite approaches the characteristics of a black body its heat radiating capability is far superior to that of any metal employed as anode material in tubes. A graphite anode will dissipate more than three times the heat of a comparably sized metal anode. The high thermal conductivity of graphite permits uniform heat distribution . . . avoiding "hot spots" and permitting anode operating temperatures up to 820°C. Since the material is infusible no anode warping or puncture can occur.

BULLETIN CDB-3

UNITED ELECTRONICS COMPANY

42 SPRING STREET, NEWARK 4, NEW JERSEY

Since 1934

ELECTRICAL AND PHYSICAL DATA

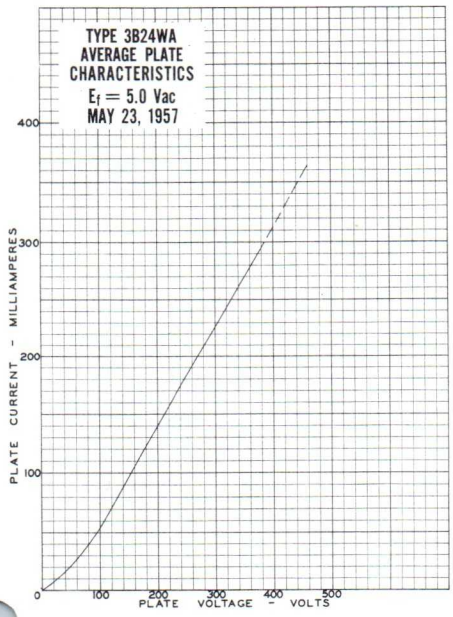
TYPE	CATHODE	RECTIFIER RATINGS					CLIPPER DIODE RATINGS					NET WEIGHT OUNCES	SHOCK RATING	MOUNTING POSITION
		FILAMENT		epx kv	ib a	Ib mAdc	FILAMENT		epx kv	ib a	Ibrms mAac			
		Vac	Aac				Vac	Aac						
3B24WA	Bonded Thoria Filament	5.0	3.0	20	.300	60						2¼	450G	ANY
	(½ Filament)	2.5	3.0	20	.150	30								
3B29	Unipotential Oxide	2.5	4.9	16	.250	65	2.5	4.9	10	8	240	2½	—	ANY
217C	Thoriated Tungsten	10.0	3.25	7.5	.600	150						7	—	VERTICAL
371B	Thoriated Tungsten	5.0	10.3	25	1.5	300						5¾	—	VERTICAL
543	Bonded Thoria Filament	5.0	5.0	30	.400	100						2½	375G	ANY
				15	.600	150								
558	Bonded Thoria Filament	5.0	12.0	15	.840	300	5.0	12.0	15	7	470	3	300G	ANY
576A	Thoriated Tungsten	5.0	14.0	25	2.5	500	5.4	15.0	25	12	800	5½	—	VERTICAL
577	Thoriated Tungsten	5.0	10.3	25	1.5	300						5	—	VERTICAL
578	Thoriated Tungsten	5.0	6.0	40	.750	100						4	—	VERTICAL
582	Unipotential Oxide	2.5	4.9	7	.800	210						2½	—	ANY
				9	.750	200								
583	Unipotential Oxide	2.5	4.9	17	.250	65	2.5	4.9	15	8	240	2½	375G	ANY
593	Thoriated Tungsten	5.0	10.3	25	1.5	300						5	—	VERTICAL
596*	Filamentary Oxide Coated	5.0	3.0	4.5	.165	55						3½	—	VERTICAL
				2.3	.825	275								
705WA	Bonded Thoria Filament	5.0	5.0	30	.400	100						3¼	300G	ANY
				15	.600	150								

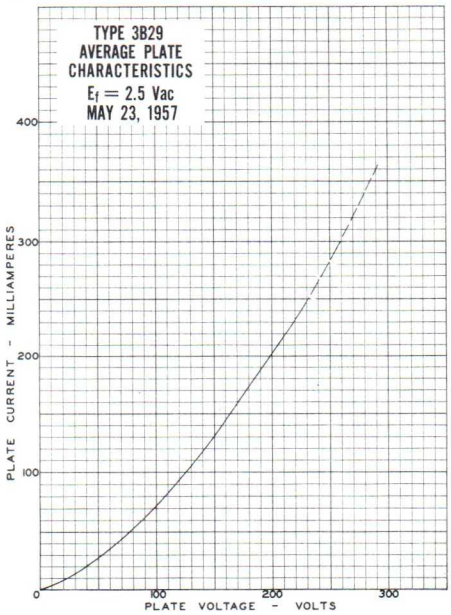
*FULL-WAVE RECTIFIER with Metal Anodes.

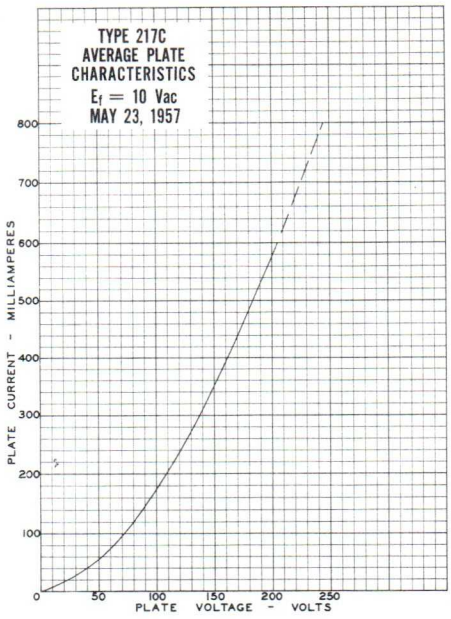
BONDED THORIA FILAMENTS: Extremely rugged, and capable of higher emission than the conventional thoriated tungsten filament, the bonded thoria tungsten core emitters used in types 3B24WA, 543, 558 and 705WA will yield exceptionally long life under the most severe environmental conditions.

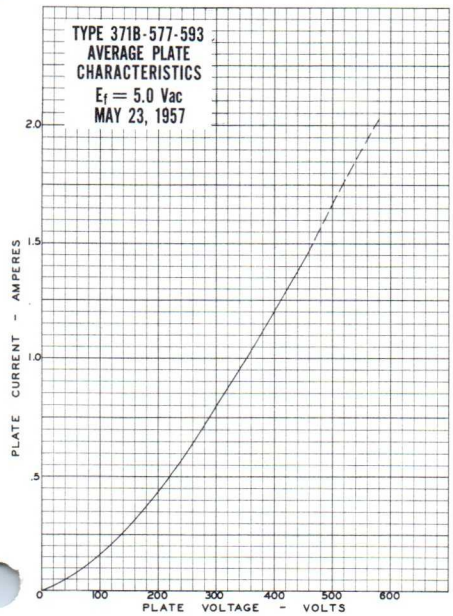
INSTALLATION: Metal bases and all unused pins should be connected externally to one of the filament pins to prevent corona.

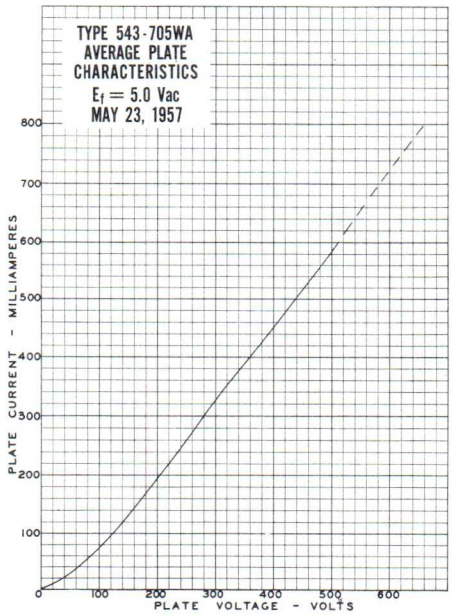
AVERAGE PLATE CHARACTERISTICS CURVES

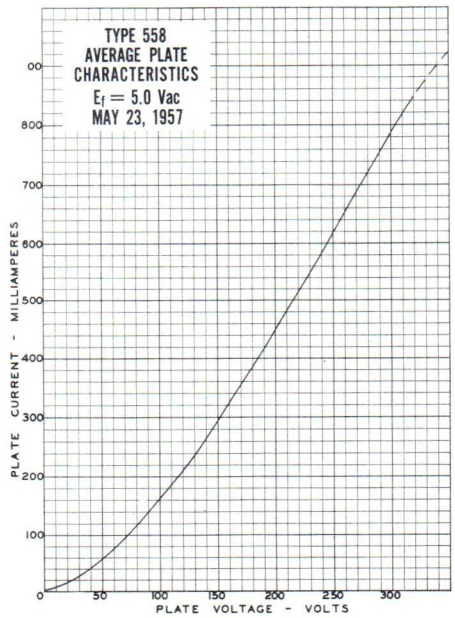


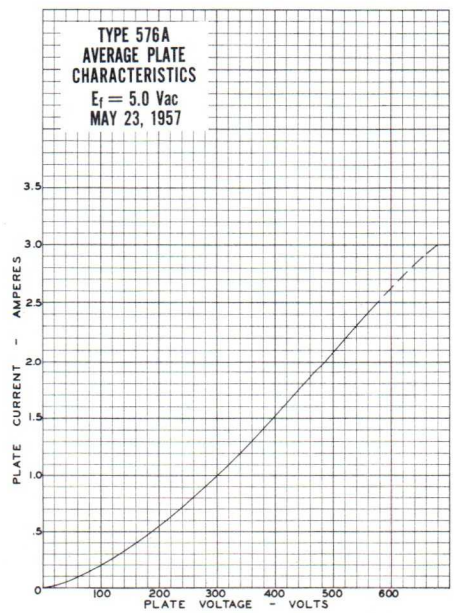


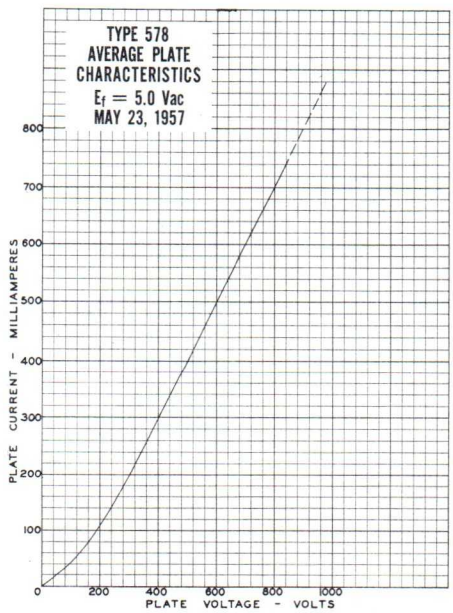




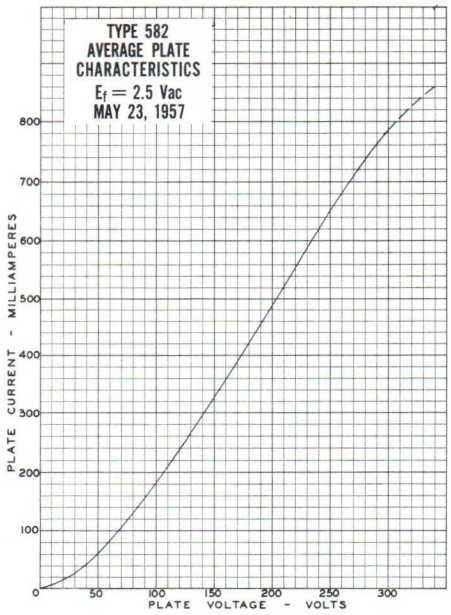


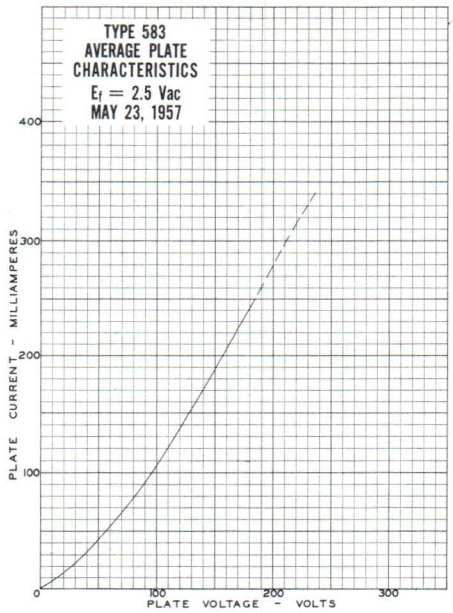


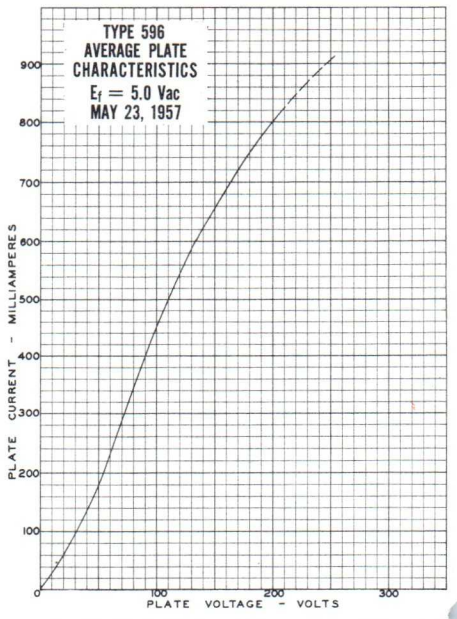




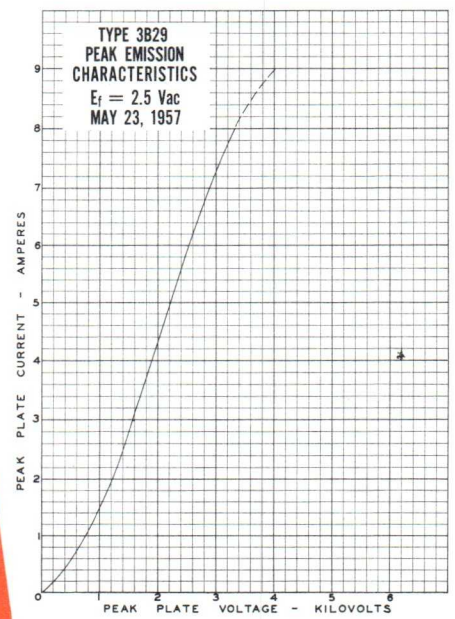
AVERAGE PLATE CHARACTERISTICS CURVES

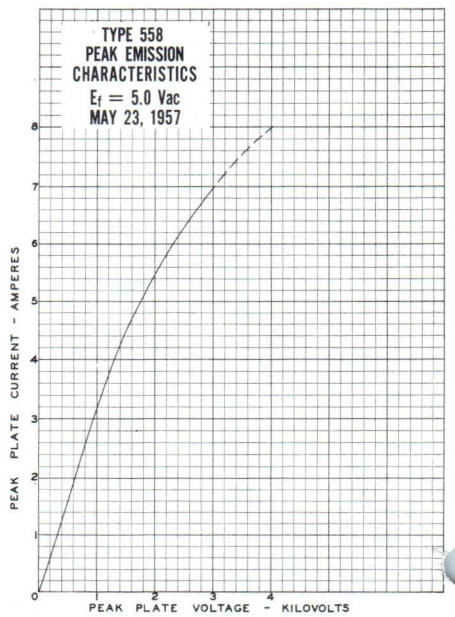


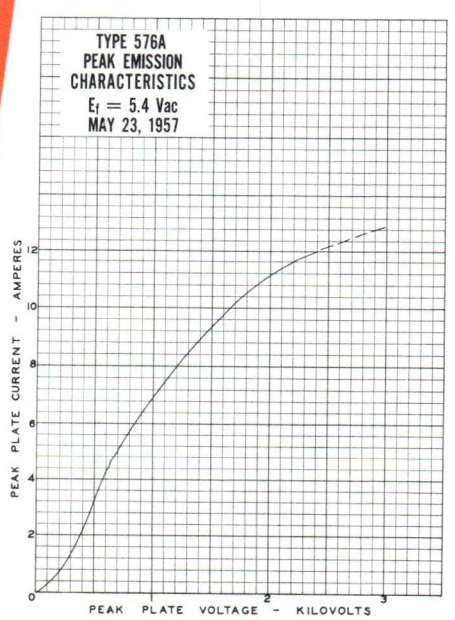


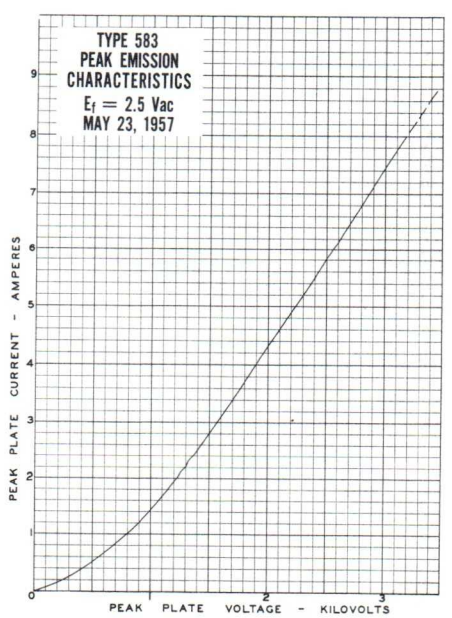


PEAK EMISSION CHARACTERISTICS CURVES



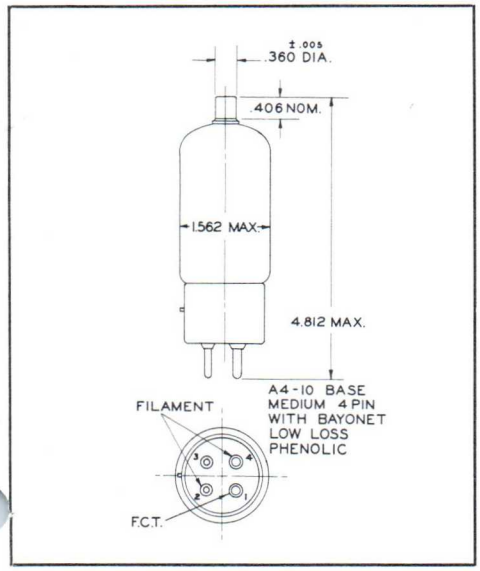






OUTLINE DRAWINGS

TYPE 3B24WA



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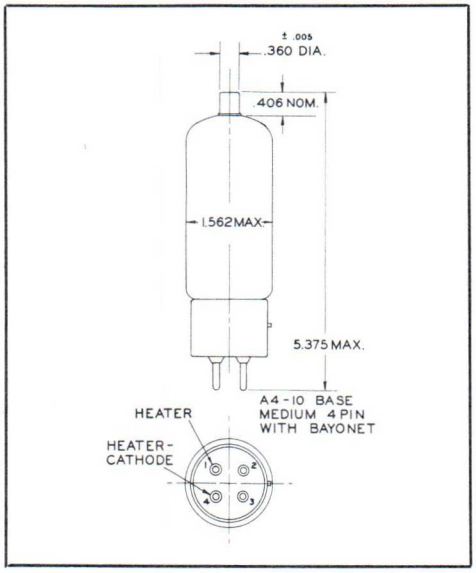

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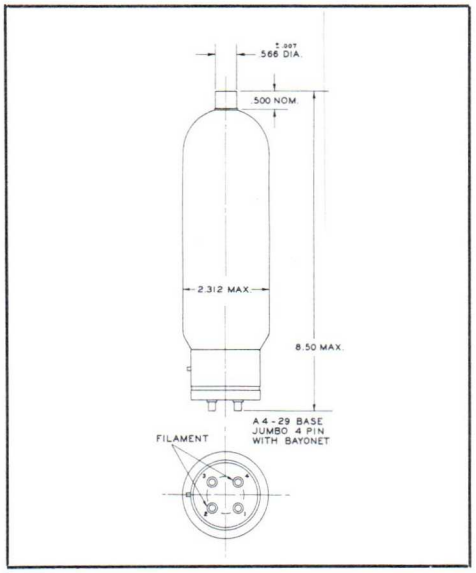

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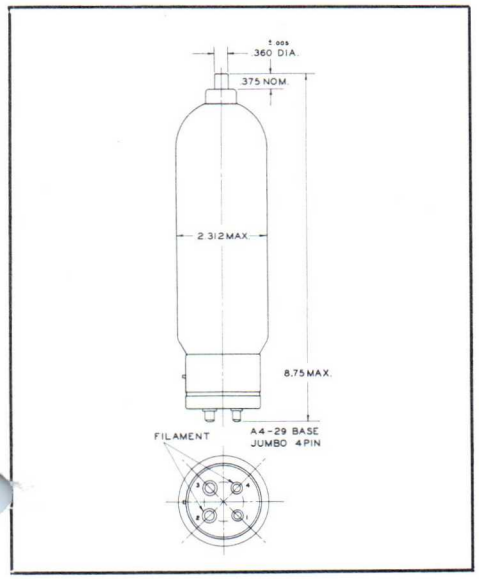

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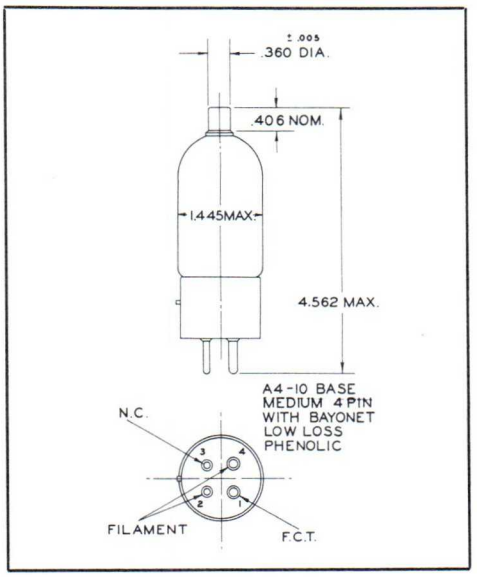

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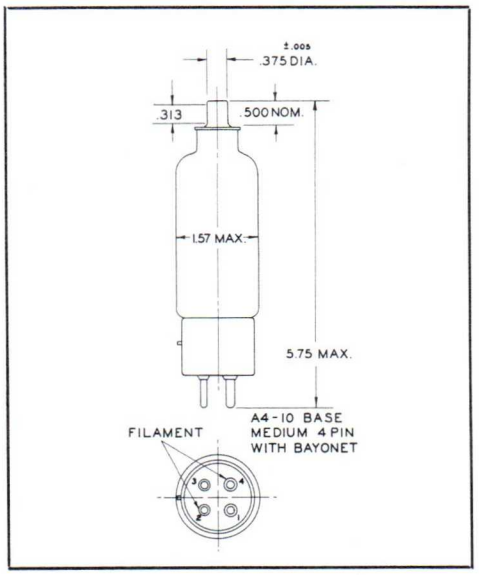

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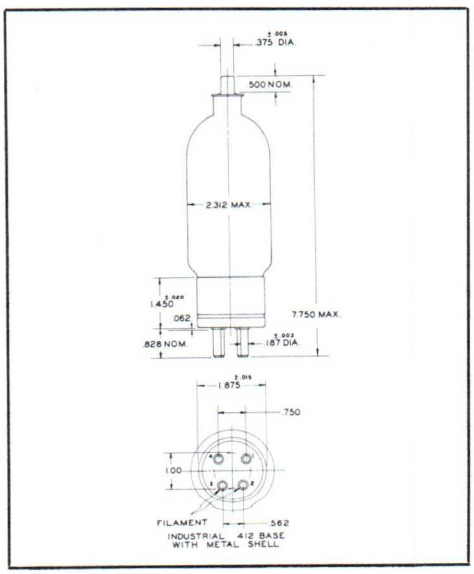

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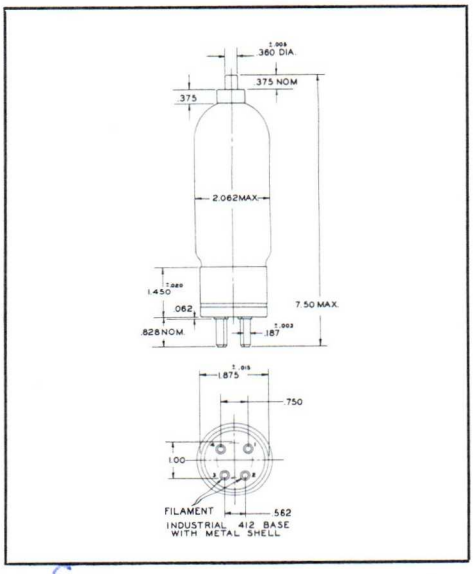

OUTLINE DRAWINGS

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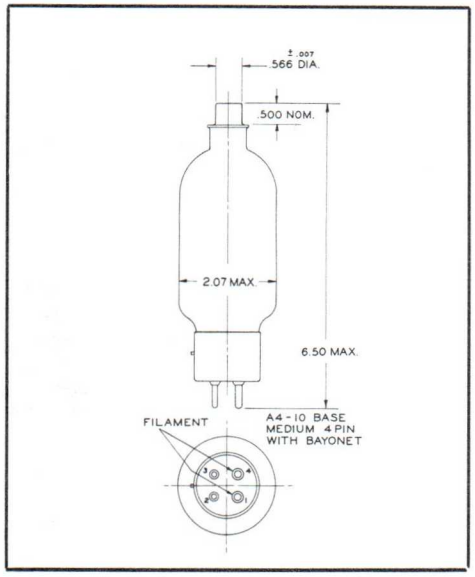

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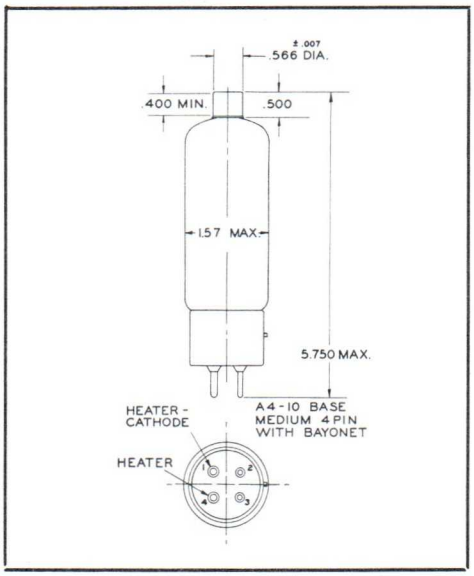

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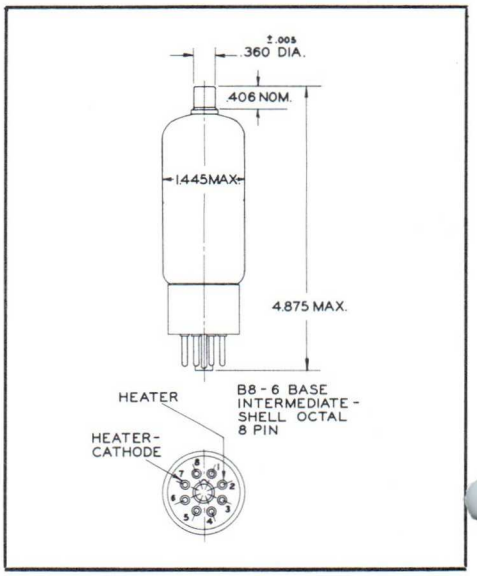

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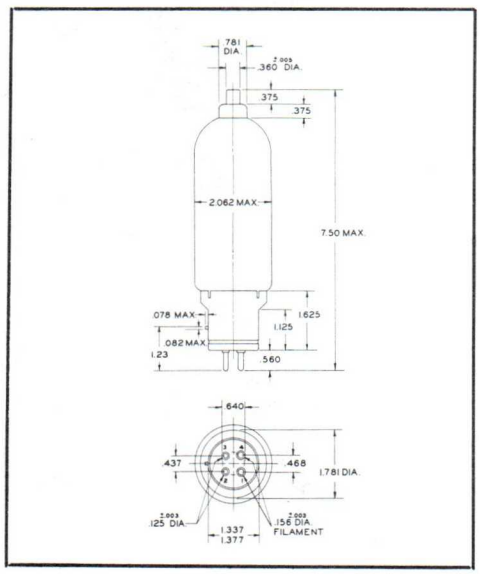

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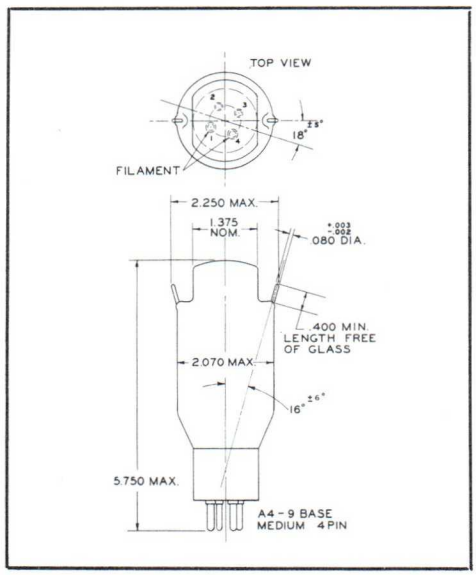
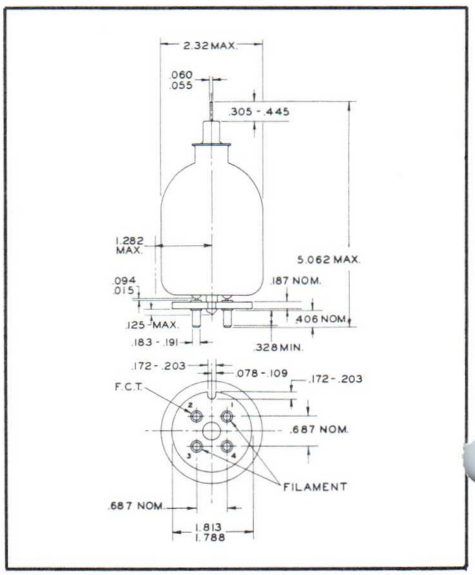


TYPE 705WA



Write for Bulletin:

CDB1 — Miniaturized External Anode Diodes

CDB2 — Major Series, Clipper Diode — Rectifier Tubes

CDB4 — Vacuum Capacitors — Variable and Fixed Types

CDB5 — Electron Power Tubes; Transmitting and Industrial Power Tubes

UNITED ELECTRONICS COMPANY

42 SPRING STREET · NEWARK 4, NEW JERSEY

→ IP.1 (1)

UNITED ELECTRONICS COMPANY

TYPE 6303

HIGH-VACUUM CLIPPER DIODE-RECTIFIER

The UNITED 6303 is designed to withstand the severe shock and vibration conditions encountered in military electronic equipment while reliably delivering the high peak power for which it is rated. The *BONDED THORIA FILAMENT* enables the tube to withstand a minimum of 300 g shock and gives the emission reserve necessary to guarantee long life when the 6303 is used at maximum ratings.
In addition to eliminating the thoriated tungsten filament, a prime source of catastrophic failures in high power diodes, the 6303 features a wide circumference kovar top seal, which reduces seal temperature, and a zirconium coated graphite anode which greatly improves the dissipation characteristics.

CHARACTERISTICS AND RATINGS	CLIPPER DIODE RECTIFIER TYPE 6303

ELECTRICAL DATA

RECTIFIER RATINGS

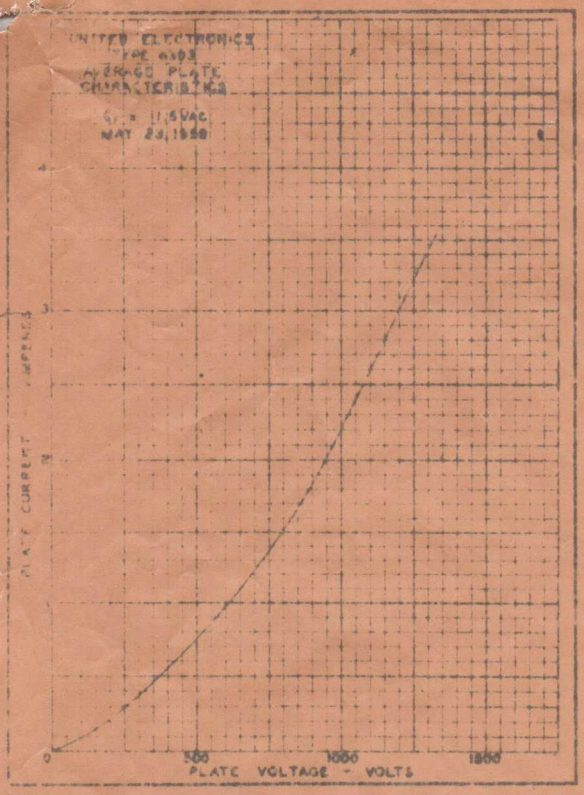
Filament Voltage --- Vac	11.5 ± 2.5%
Filament Current — Aac	15.25 ± 1.00
Maximum Peak Inverse Voltage	40 kv
Maximum Peak Plate Current	2.5 a
Maximum Average Plate Current	700 mAdc
Anode Dissipation	550 W

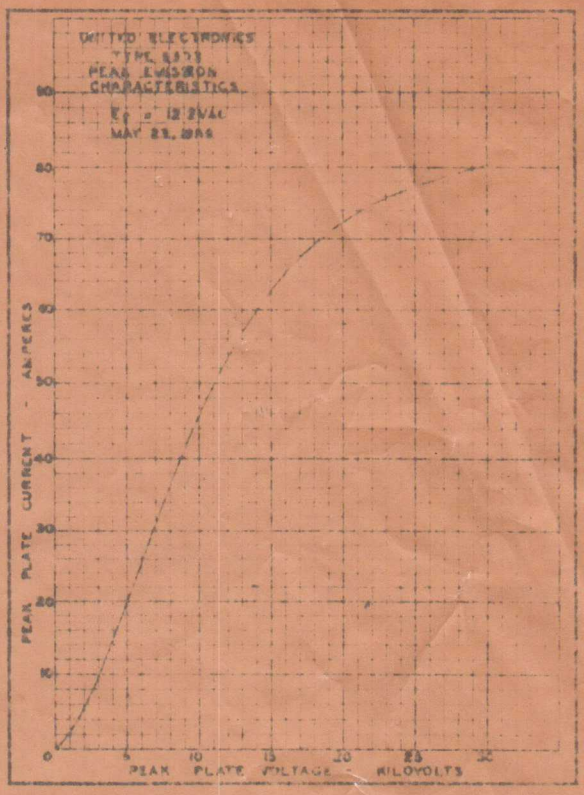
CLIPPER DIODE RATINGS

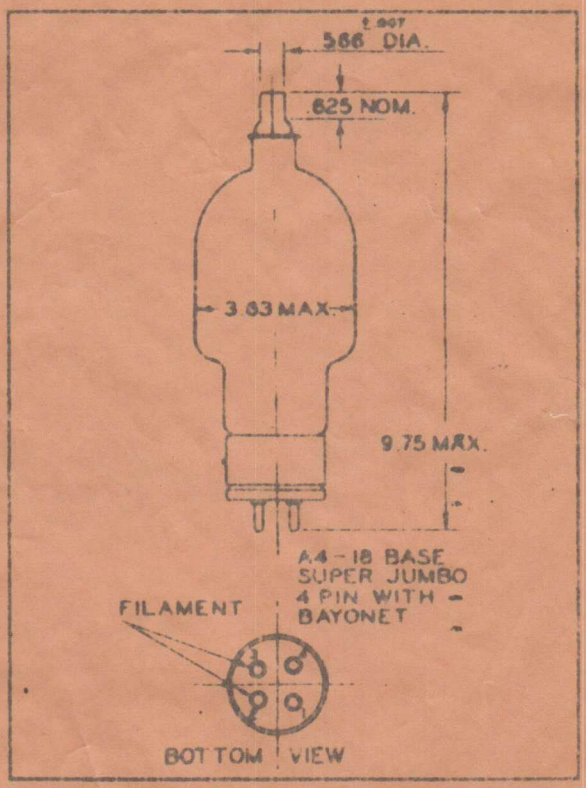
Filament Voltage — Vac	12.2 ± 2.5%
Filament Current — Aac	15.5 ± 1.00
Maximum Peak Inverse Voltage	33 kv
Maximum Peak Plate Current	50 a
Root Mean Square Current	1.25 Aac
Anode Dissipation	550 W

MECHANICAL DATA

DIMENSIONS	Per Drawing
BASE	A4-18
NET WEIGHT	10 oz.
SHOCK RATING	300 g
VIBRATION RATING	10 g







UNITED ELECTRONICS COMPANY

A Subsidiary of LING ELECTRONICS, INC.

42 SPRING STREET HU 4-6300 NEWARK 4, N. J.

(1)

UNITED ELECTRONICS COMPANY

42 SPRING STREET NEWARK 4, NEW JERSEY

ELECTRON TUBES VACUUM CAPACITORS

TELEPHONE HUMBOLDT 2-0576

May 7, 1958

TO PROJECT AND DESIGN ENGINEERS:

Subject: New Tubes and Capacitors for
Missile and Radar Requirements

In addition to leadership in tubes for heavy radar, the special tube development work by UNITED ELECTRONICS over the years has pointed more and more to advanced design requirements for air borne radar and missiles. Size and weight diminution, as well as critical attention to temperature, impact, vibration and other important criteria for reliability, has characterized our objectives and accomplishments in this field.

In keeping with our policy of informing the equipment project engineers as our developments in this field progress, we are sending you herewith tentative characteristics and rating data on several new types of external anode tubes as follows:

7159 (modified 554)
541 (external anode version of 576)
548 (external anode version of 561)
552 (miniature external anode diode)
X-4 (3000 volt exp miniature external anode diode)

Beyond these electron tube activities, the environmental problems of missile instrumentation have called for special developments in the variable capacitor field. UNITED R & D has contributed importantly in this area. Our new ceramic enveloped, vacuum dielectric, variable capacitors are now giving a good account of themselves. See the enclosed bulletin CDB4 for series A & B capacitors which are currently in production.

The handy file separator accompanying this letter contains the advance data mentioned above as well as our standard data bulletins as follows:

CDB1 - Miniaturized External Anode Diodes
CDB2 - Major Series, Internal Anode Clipper Diode - Rectifier Tubes
CDB3 - Medium Power, Internal Anode Clipper Diode - Rectifier Tubes

UNITED ELECTRONICS COMPANY allocates an unusually high percentage of income to development of new products - being predominantly guided by what equipment manufacturers tell us they want. It may be likely that we can be of significant help to you, and any inquiries you may direct to us will receive prompt and friendly attention.

Yours very truly,

UNITED ELECTRONICS COMPANY

C. A. RICE
President

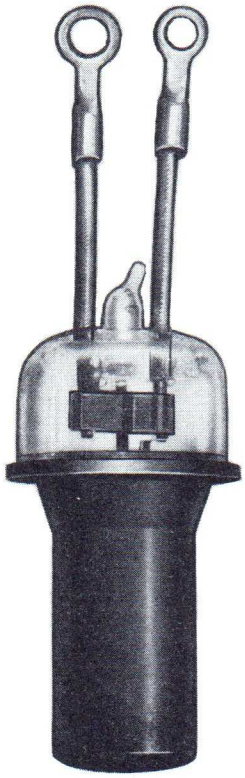
ab

UNITED ELECTRONICS

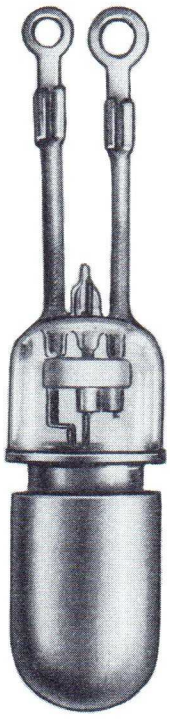
MINIATURIZED POWER DIODES

HIGH VACUUM THERMIONIC TYPES

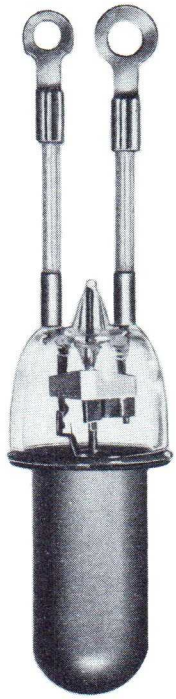
ILLUSTRATIONS ARE ACTUAL SIZE



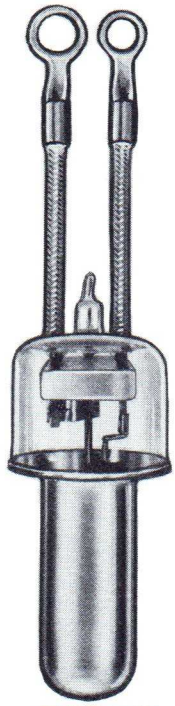
TYPE 554



TYPE 6339



TYPE 589



TYPE 545

UNITED ELECTRONICS offers these four external anode rectifier-clipper diode tubes for missile and other special airborne instrumentation.

It will be worthwhile for engineers engaged in evaluation of *semi-conductors* vs. *tubes* in such usage, to watch for new miniaturized high vacuum power tubes now under development by UNITED, with severe high temperature environment in mind.

UNITED ELECTRONICS COMPANY

42 SPRING STREET *Since 1934* **NEWARK 4, N. J.**

UNITED ELECTRONICS

MINIATURIZED THERMIONIC POWER DIODES

CHARACTERISTICS AND RATINGS	RECTIFIER TYPE 545	CLIPPER DIODE RECTIFIER TYPE 554	CLIPPER DIODE RECTIFIER TYPE 589	CLIPPER DIODE RECTIFIER TYPE 6339
MECHANICAL DATA				
Nominal Overall Dimensions:				
Length (less Leads) — Inches	1.87	2.35	1.87	1.96
Lead Lengths — Inches	1.50	1.50	1.50	1.50
Diameter — Inches	0.87	1.13	0.87	0.87
Anode Dimensions:				
Contact Length — Inches	0.75	1.00	0.75	0.75
Diameter — Inches	0.49	0.68	0.59	0.75
Bulb	Per Drawing	Per Drawing	Per Drawing	Per Drawing
Mounting Position Supported by Anode	Any	Any	Any	Any
Filament Terminals	Per Drawing	Per Drawing	Per Drawing	Per Drawing
Type of Cooling	Liquid or Air	Liquid or Air	Liquid or Air	Liquid or Air
Net Weight	0.7 oz.	1.2 oz.	0.8 oz.	1.1 oz.
Shock Rating	300 g	300 g	300 g	300 g
Vibration Rating 10-500 cps	10 g	10 g	10 g	10 g
Maximum Bulb Temperature	265°C	265°C	265°C	265°C
Maximum Coolant Temperature Range	—60°C to 165°C	—60°C to 165°C	—60°C to 165°C	—60°C to 165°C
ELECTRICAL DATA				
General:				
Heater Voltage — Vac	6.3	6.3	6.3	6.3
Heater Current — Aac	1.3	3.5	1.6	1.6
Cathode	Unipotential	Unipotential	Unipotential	Unipotential
Cathode Preheat Time	60 sec.	60 sec.	60 sec.	60 sec.
Maximum Ratings:				
Liquid Cooled Rectifier:				
1. Peak Inverse Voltage	5 kv	17 kv	16 kv	16 kv
Peak Plate Current	160 ma	470 ma	250 ma	250 ma
Average Plate Current	50 mAdc	150 mAdc	65 mAdc	65 mAdc
2. Peak Inverse Voltage	—	—	10 kv	10 kv
Peak Plate Current	—	—	400 ma	400 ma
Average Plate Current	—	—	100 mAdc	100 mAdc
Radiation Cooled Rectifier:**				
Peak Inverse Voltage	5 kv	17 kv	16 kv	16 kv
Peak Plate Current	65 ma	225 ma	125 ma	125 ma
Average Plate Current	20 mAdc	70 mAdc	33 mAdc	33 mAdc
Liquid Cooled Clipper Diode:	*			
Peak Inverse Voltage	—	16 kv	10 kv	10 kv
Peak Plate Current	—	12 a	8 a	8 a
Root Mean Square Current	—	450 mAac	300 mAac	300 mAac
Radiation Cooled Clipper Diode:**	*			
Peak Inverse Voltage	—	16 kv	10 kv	10 kv
Peak Plate Current	—	12 a	8 a	8 a
Root Mean Square Current	—	225 mAac	150 mAac	150 mAac

*Clipper Diode ratings for type 545 available upon request.
**Higher ratings apply if heat sink is used.

TENTATIVE RATINGS

NEW EXTERNAL ANODE DIODES

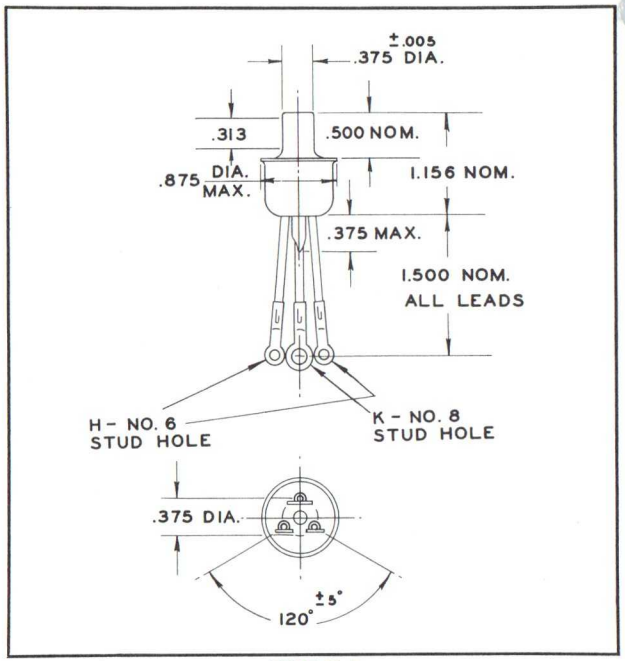
CHARACTERISTICS & RATINGS	RECTIFIER TYPE X-4	RECTIFIER CLIPPER 541	RECTIFIER CLIPPER 548	RECTIFIER TYPE 552	RECTIFIER CLIPPER 7159
MECHANICAL DATA					
Dimensions	Per Drawing	Per Drawing	Per Drawing	Per Drawing	Per Drawing
Mounting Position	Any	Any	Any	Any	Any
Type of Cooling	Radiation	Liquid	Liquid	Radiation	Liquid
Shock Rating	300 g	——	300 g	300 g	300 g
Vibration Ratings 10-500 cps	10 g	——	10 g	10 g	10 g
Maximum Bulb Temperature	265°C	265°C	265°C	265°C	265°C
Coolant Temperature	——	−60°C+165°C	−60°C+165°C	——	−60°C+165°C
Net Weight	0.5 oz.	3.6 oz.	5.3 oz.	0.7 oz.	1.4 oz.
ELECTRICAL DATA					
Rectifier Ratings					
Heater Voltage Vac	6.3	5.0	11.5	2.5	6.3
Heater Current Aac	.63	14.0	15.25	1.67	3.5
Cathode	coated unipotential	thoriated tungsten filament	bonded thoria filament	bonded thoria filament	coated unipotential
Peak Inverse Voltage	3 kv	25 kv	33 kv	20 kv	17 kv
Peak Plate Current	.280 a	2.5 a	2.7 a	.04 a	.470 a
Average Plate Current	70 mAdc	500 mAdc	860 mAdc	10 mAdc	150 mAdc
Clipper Diode Ratings					
Heater Voltage Vac	——	5.4	11.5	——	6.3
Heater Current Aac	——	15.0	15.25	——	3.5
Peak Inverse Voltage	——	25 kv	33 kv	——	16 kv
Peak Plate Current	——	12 a	50 a	——	12 a
RMS Current	——	800 mAac	1.25 Aac	——	450 mAac

UNITED ELECTRONICS COMPANY

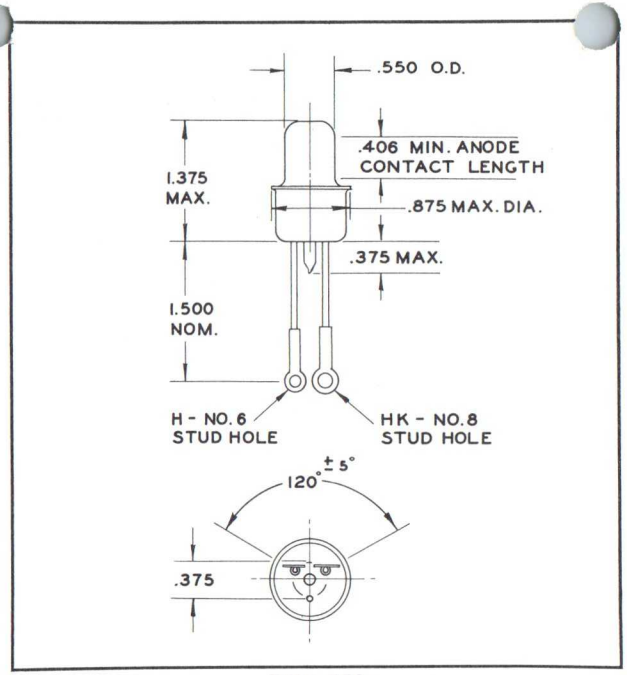
42 SPRING STREET • NEWARK 4, N. J.

HUMBOLDT 2-0576

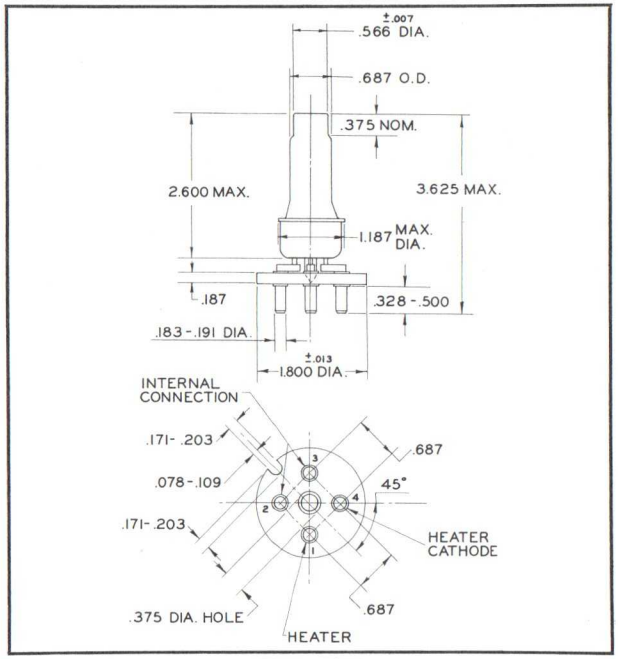
4-58-6000—FORM 27 TENTATIVE



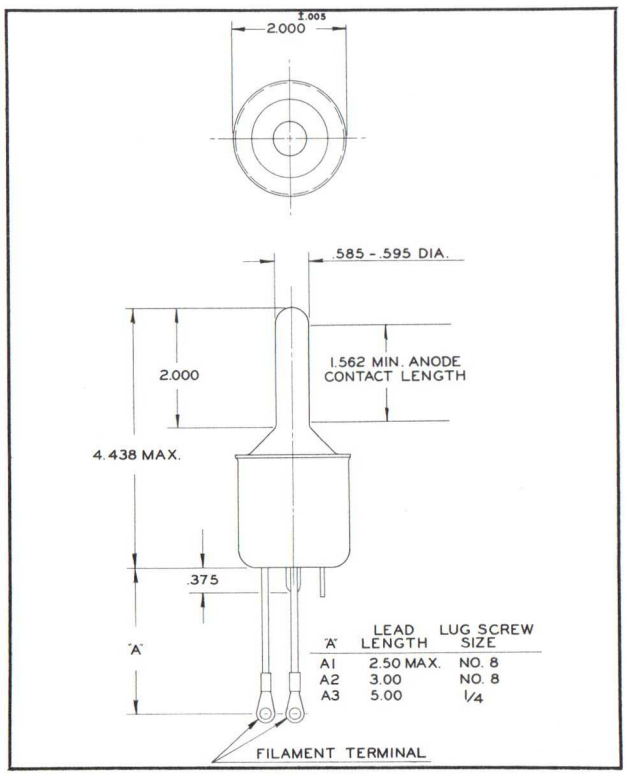
TYPE X-4



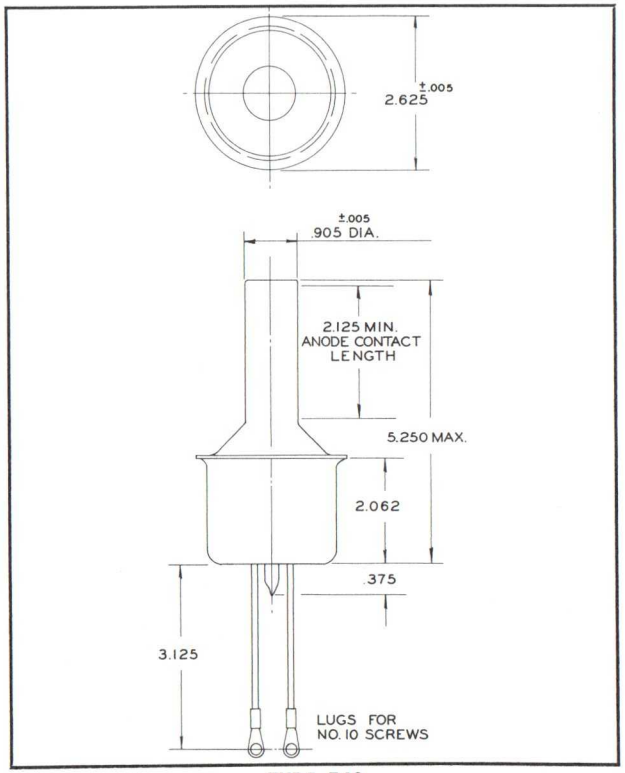
TYPE 552



TYPE 7159



TYPE 541



TYPE 548

Type 7159 is physically and electrically interchangeable with type 719A in applications where the peak inverse voltage does not exceed 17 kv.

For use at maximum ratings radiating fins are required on liquid cooled types.

CHARACTERISTICS CURVES

TYPES

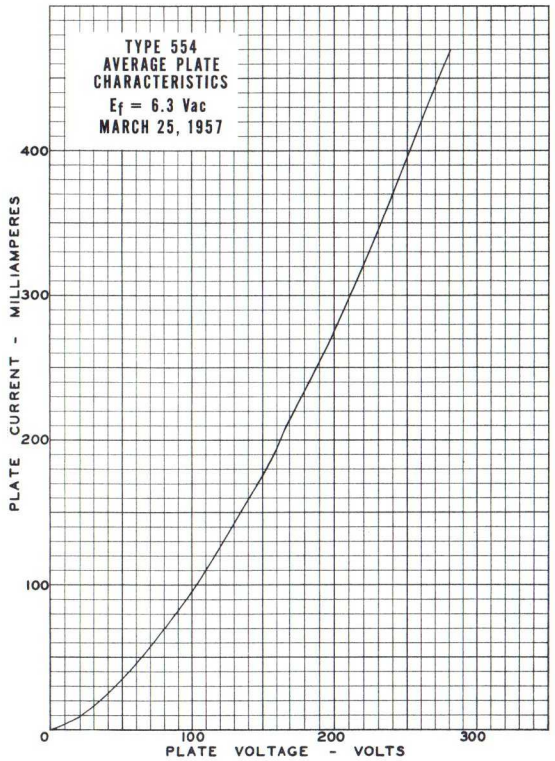
545

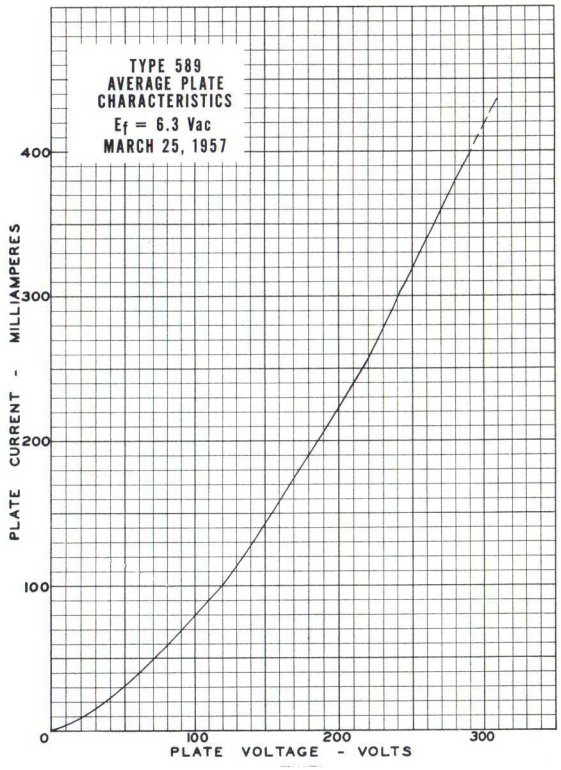
554

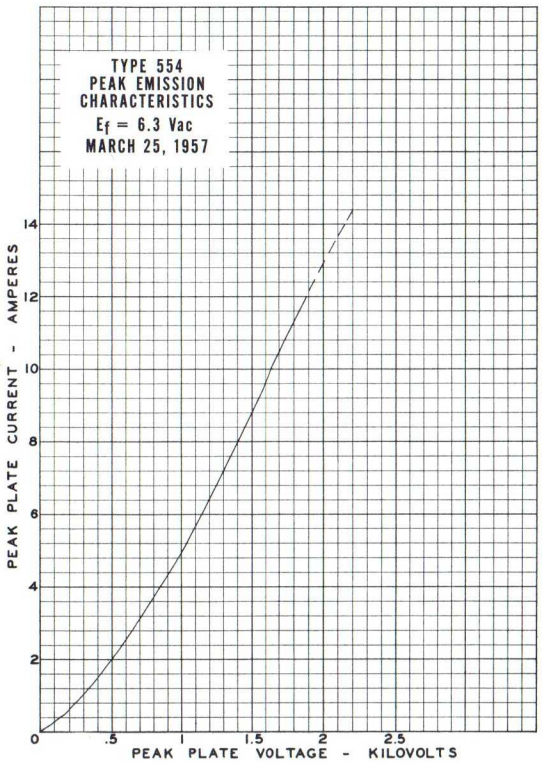
589

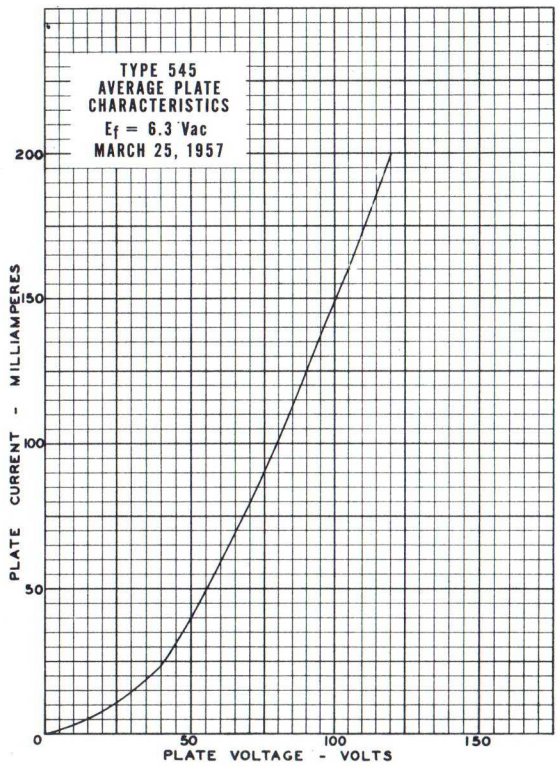
*6339

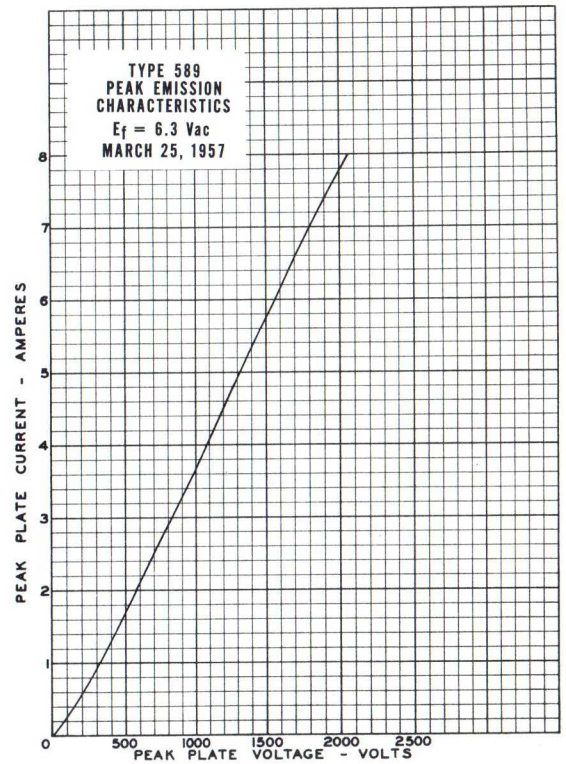
*589 curves apply





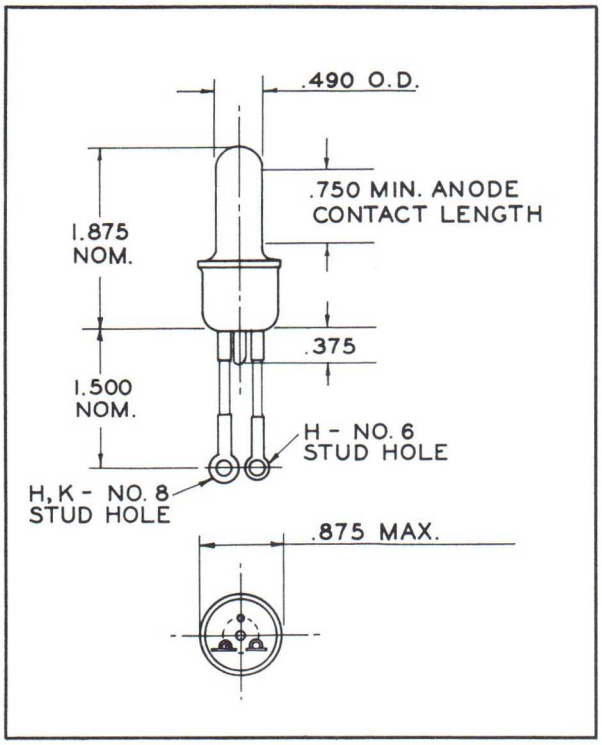




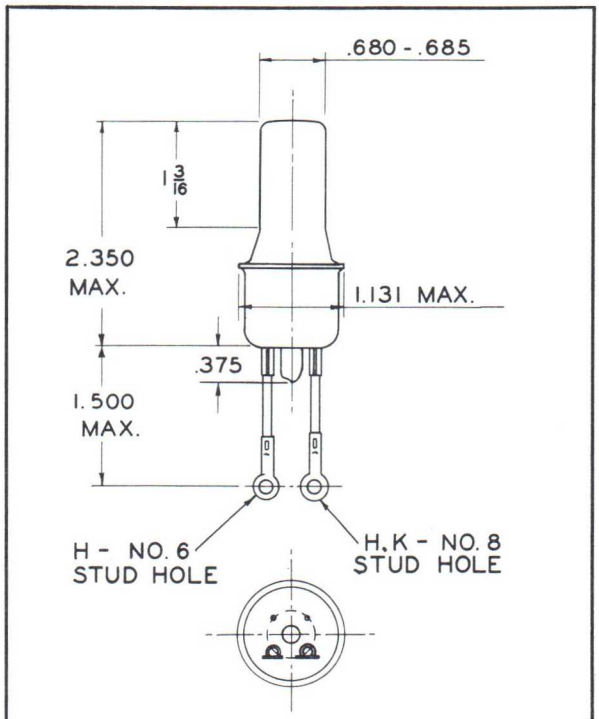


OUTLINE DRAWINGS

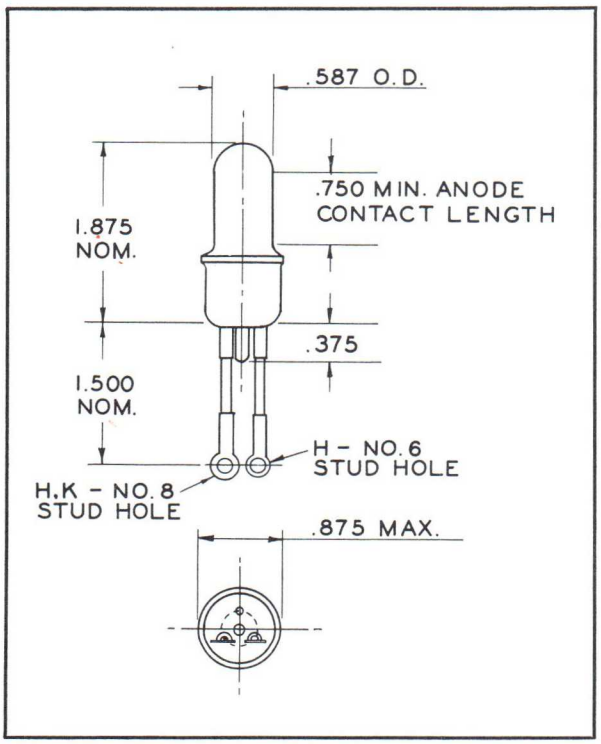
TYPE 545



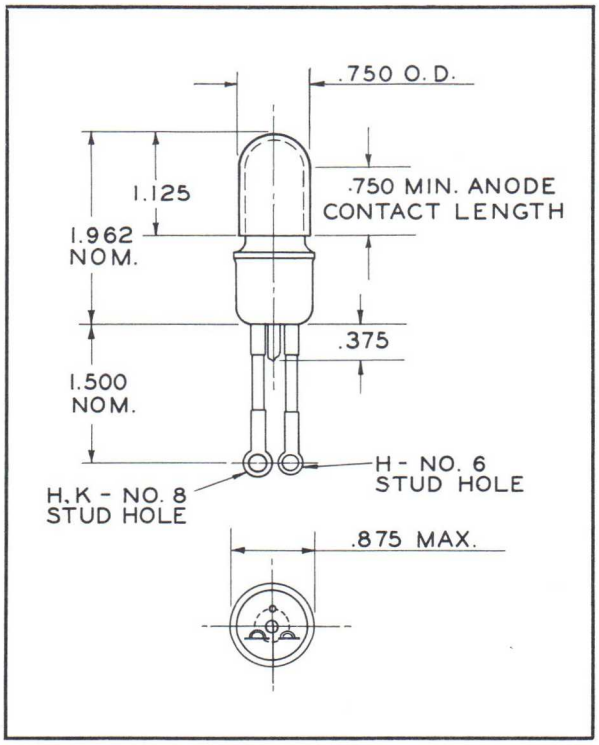
TYPE 554



TYPE 589



TYPE 6339

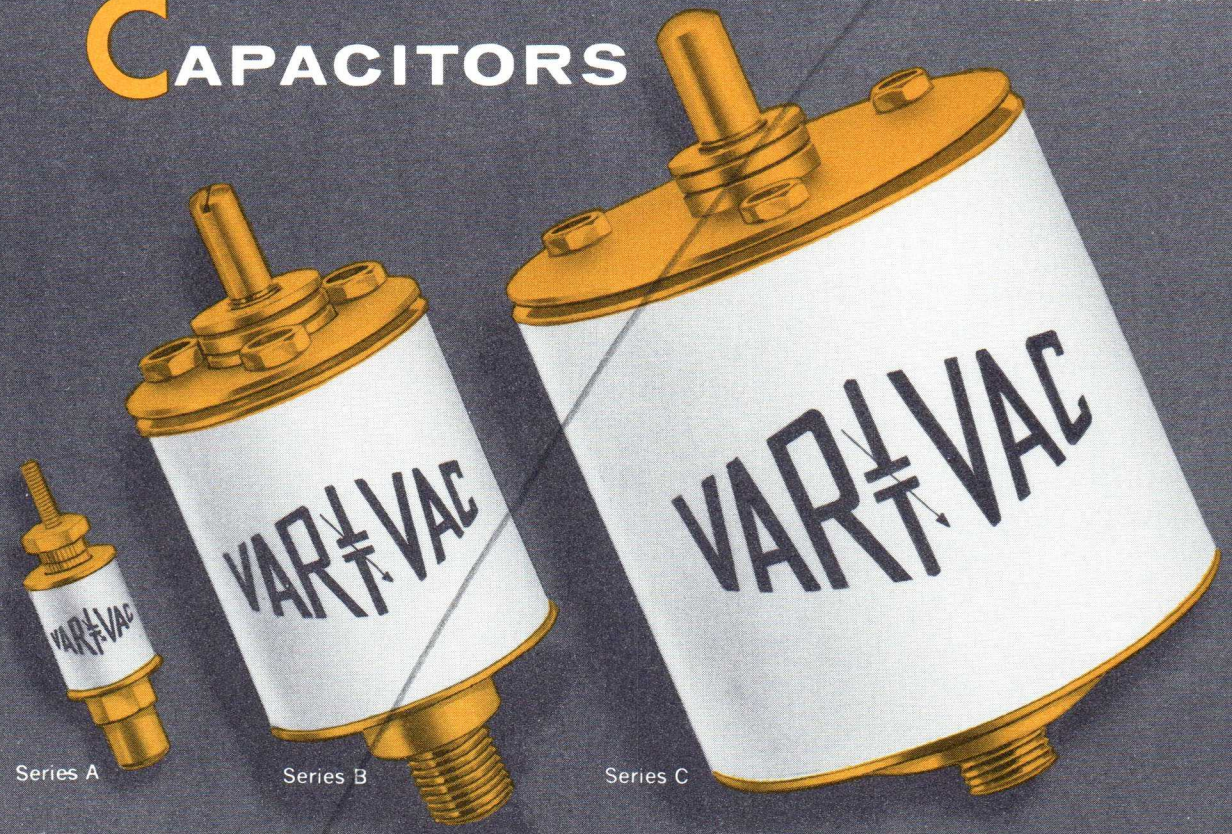


UNITED ELECTRONICS COMPANY

42 SPRING STREET *Since 1934* NEWARK 4, N. J.

VARIABLE VACUUM CAPACITORS

Actual size illustrations



Series A Series B Series C

IN HIGH ALUMINA CERAMIC ENVELOPES FOR LOW LOSS AND HIGH TEMPERATURE OPERATION

The three capacitors illustrated are product of a design and development project which has established a *break through* into higher practicality for variable vacuum capacitors. They have great appeal in applications where technical, physical and cost factors have heretofore been prohibitive. There are at present three *size groups,* each of which contains several types differing in capacitance range and voltage ratings.

The art of adjusting the position of elements within vacuum sealed electronic devices by use of a bellows arrangement substantially predates World War II. In this new range of capacitors UNITED ELECTRONICS has advanced this custom through associating it with the newer techniques of ceramic bodies as employed in modern miniaturized and ruggedized electron tubes. Ceramic to metal closures are doubly important in variable vacuum capacitors since moving internal parts are involved. Extremely close tolerance assemblies are made possible under conditions of high production mechanization.

Modern miniaturized circuitry, whether in air, liquid or in rigid encapsulation, will invite advantageous opportunities for these new ceramic VariVacs available in voltage ratings of from 1,000 to 25,000, and with maximum engaged capacitance values up to 500 uuf.

VARIVAC

The above Trade Mark symbolizes Variable Vacuum Capacitors by UNITED ELECTRONICS

CDB-4V

UNITED ELECTRONICS, 42 Spring Street, Newark 4, N. J.

VARIAN VAC

VACUUM VARIABLE CAPACITORS
CERAMIC-METAL ENVELOPES

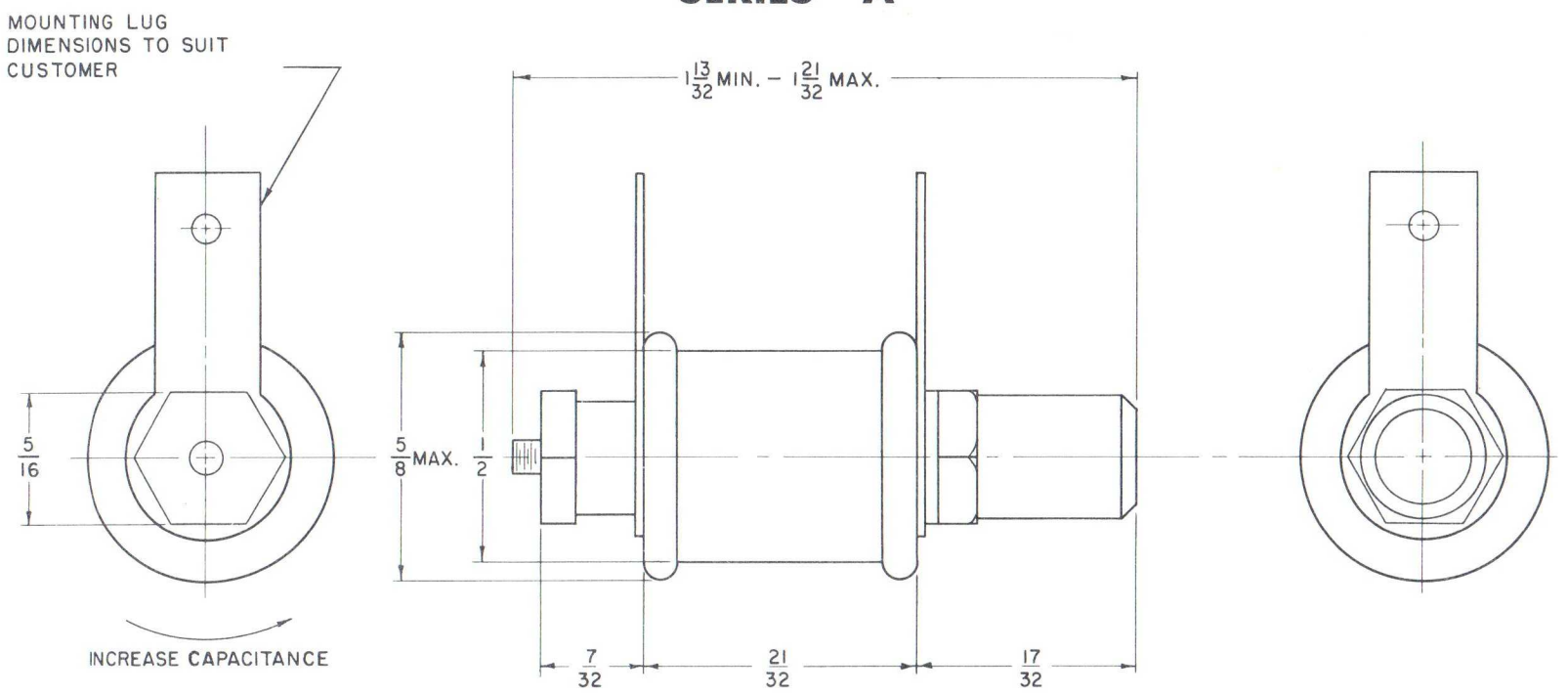
CHARACTERISTICS AND RATINGS	SERIES A TYPE A-10/3	SERIES B TYPE B-50/10	SERIES C TYPE C-250/10	SERIES C TYPE C-400/10
MECHANICAL DATA				
Dimensions	Per Drawing	Per Drawing	Per Drawing	Per Drawing
Maximum Temperature	500° C	500° C	500° C	500° C
Type of Cooling	Radiation	Radiation	Radiation	Radiation
Mounting	Per Drawing	Per Drawing	Per Drawing	Per Drawing
Net Weight	0.4 oz.	7.2 oz.	27 oz.	30 oz.
Shock Rating	*	*	*	*
Vibration Rating	*	*	*	*
Shaft Revolutions	5 Turns	21 Turns	24 Turns	24 Turns
Shaft Torque	10 oz.-in.	20 oz.-in.	20 oz.-in.	20 oz.-in.
Cycling	*	*	*	*
Altitude	*	*	*	*
ELECTRICAL DATA				
Capacitance				
Maximum	10 uufd	50 uufd	250 uufd	400 uufd
Minimum	1 uufd	3 uufd	10 uufd	15 uufd
Maximum Peak rf Voltage	3 kv	10 kv	10 kv	10 kv
Maximum rms Current	1 A	20 A	30 A	30 A
Temperature Coefficient	*	.0035 uufd Per °C	.0035 uufd Per °C	.0035 uufd Per °C

Type nomenclature explanation:

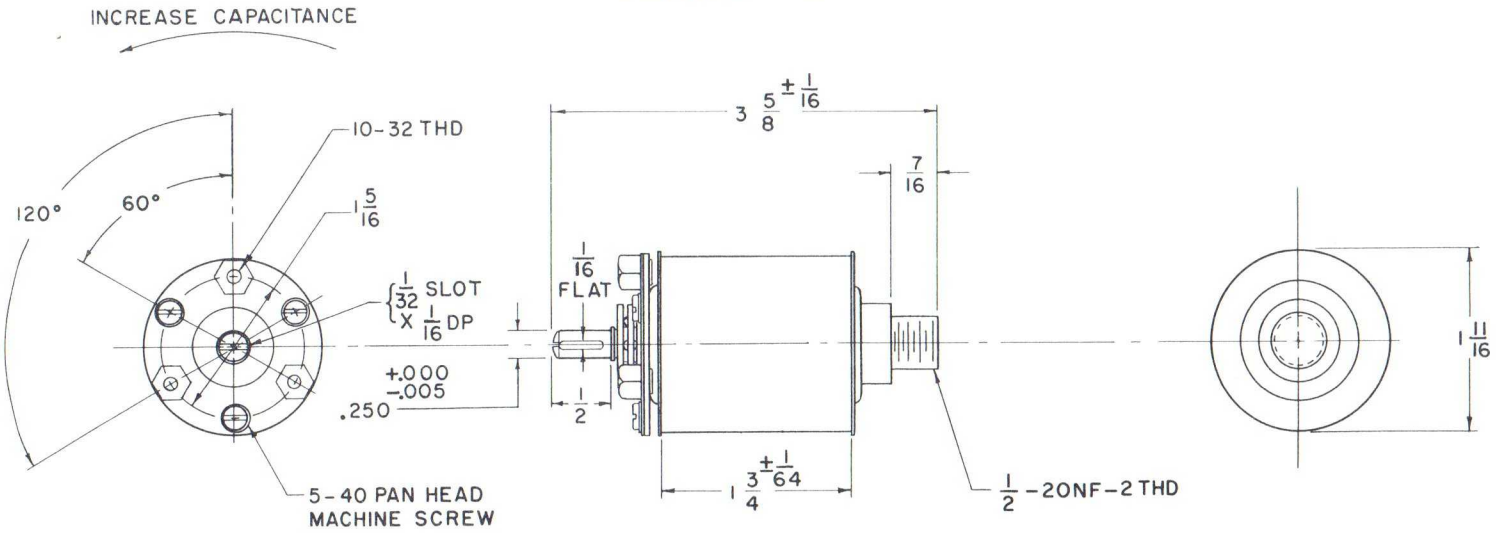
Prefix letter — Size and external form
First numeral — Maximum capacitance
Second numeral — Maximum peak rf voltage

* *Data to be published later.*

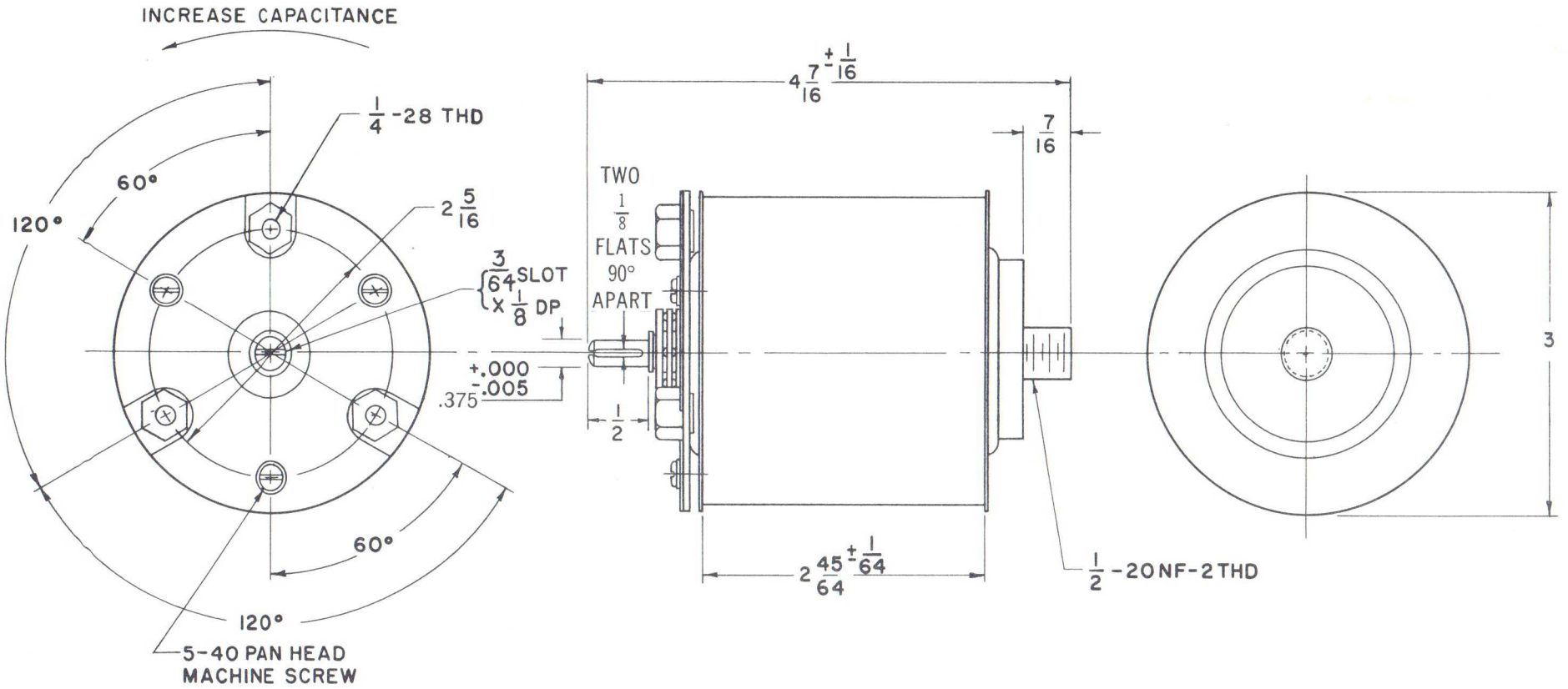
SERIES "A"



SERIES "B"



SERIES "C"



Write for Bulletin:

CDB-1 — Miniaturized External Anode Diodes

CDB-2 — Major Series, Clipper Diode — Rectifier Tubes

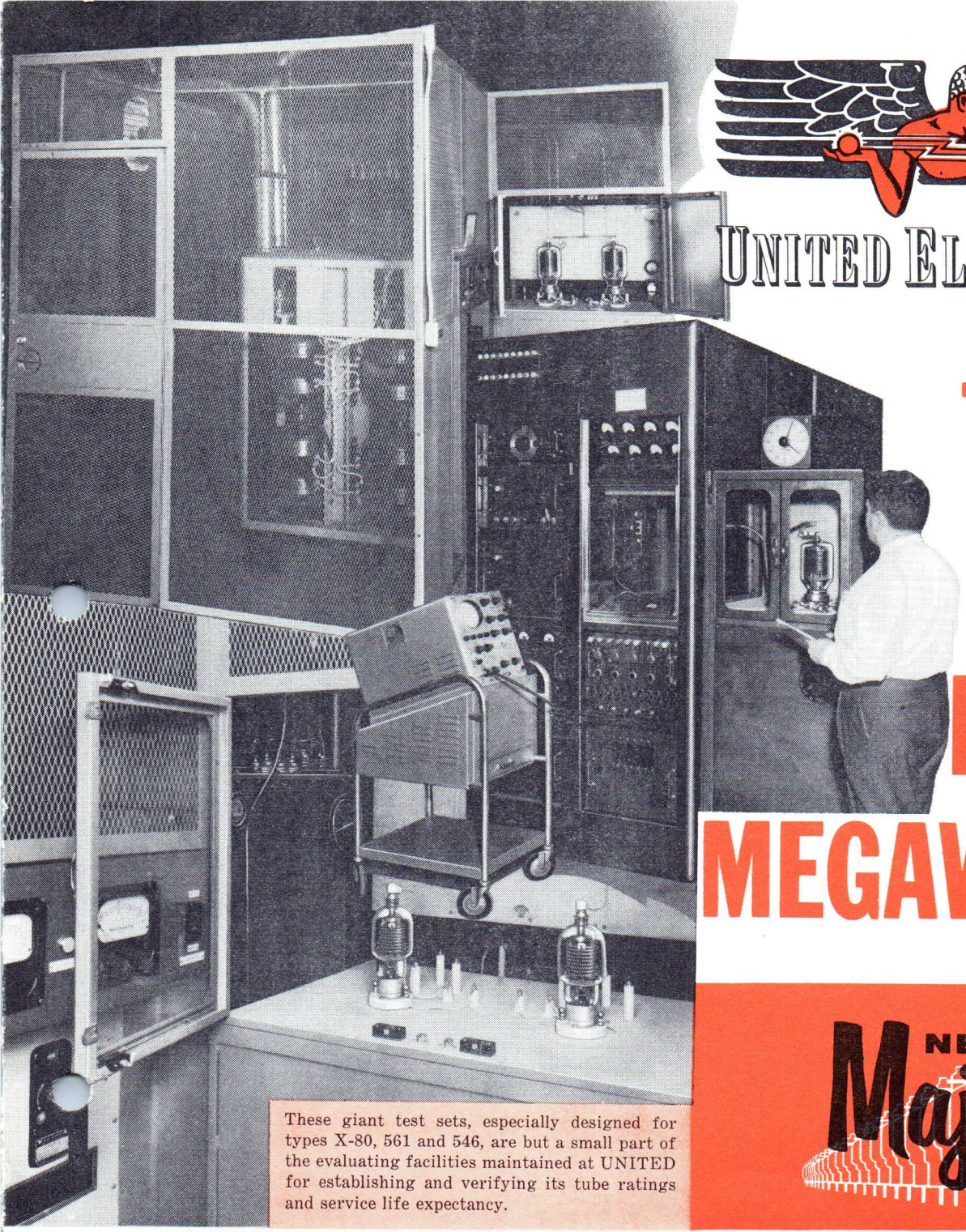
CDB-3 — High Voltage, Internal Anode, Clipper Diode — Rectifier Tubes

CDB-5 — Electron Power Tubes; Transmitting and Industrial Power Tubes

UNITED ELECTRONICS 42 Spring Street, Newark 4, N. J.

5M - 2 - 58

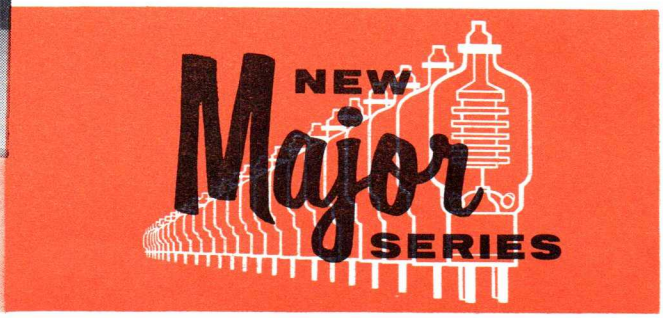
1958 (5)



These giant test sets, especially designed for types X-80, 561 and 546, are but a small part of the evaluating facilities maintained at UNITED for establishing and verifying its tube ratings and service life expectancy.

UNITED ELECTRONICS

TUBES FOR RADAR MEGAWATTS



Type	Code	Filament Vac	Filament Aac	epx kv	Anode ib	Ib A	Maximum Length"	Maximum Diam."
X-80	A	11.5	15.25	40	2.5	.700dc	9¾"	3⅝"
	B	12.2	15.5	33	50	1.25ac		
546	A	11.5	63.0	35	8.1	2.6dc	12¾"	6⅛"
	B	12.2	65.0	35	150	5.2ac		
561	A	11.5	15.25	33	2.7	.860dc	9¾"	3⅝"
	B	11.5	15.25	33	50	1.25ac		

CODE: (A) RECTIFIER (B) CLIPPER DIODE

The enormous power these high vacuum diodes deliver is explained in part by the superior combination of graphite anode and bonded thoria emitter techniques. Only UNITED ELECTRONICS, because of its singular mastery of these related processes, has accomplished in high vacuum thermionic tubes the high peak energy in small unit sizes such as represented by these paragons of our Major Series.

UNITED ELECTRONICS, 42 Spring Street, Newark 4, N. J.

UNITED ELECTRONICS

MAJOR SERIES POWER DIODES

CHARACTERISTICS AND RATINGS	CLIPPER DIODE RECTIFIER TYPE **X-80**	CLIPPER DIODE RECTIFIER TYPE **546**	CLIPPER DIODE RECTIFIER TYPE **561**
ELECTRICAL DATA			
RECTIFIER RATINGS			
Filament Voltage — Vac	11.5±2.5%	11.5±5%	11.5±5%
Filament Current — Aac	15.25	63	15.25
Maximum Peak Inverse Voltage	40 kv	35 kv	33 kv
Maximum Peak Plate Current	2.5 a	8.1 a	2.7 a
Maximum Average Plate Current	700 mAdc	2.6 Adc	860 mAdc
Anode Dissipation	550 W	2000 W	450 W
CLIPPER DIODE RATINGS			
Filament Voltage — Vac	12.2±2.5%	12.2±5%	11.5±5%
Filament Current — Aac	15.5	65	15.25
Maximum Peak Inverse Voltage	33 kv	35 kv	33 kv
Maximum Peak Plate Current	50 a	150 a	50 a
Root Mean Square Current	1.25 Aac	5.2 Aac	1.25 Aac
Anode Dissipation	550 W	2000 W	450 W
MECHANICAL DATA			
DIMENSIONS	Per Drawing	Per Drawing	Per Drawing
BASE	A4-18	Per Drawing	A4-18
NET WEIGHT	10 oz.	3.5 lbs.	10 oz.
SHOCK RATING	300 g	*	300 g
VIBRATION RATING	10 g	*	10 g

*Not yet Available

FILAMENT — Extremely rugged, and capable of higher emission than the conventional thoriated tungsten filament, the BONDED THORIA TUNGSTEN CORE EMITTERS used in UNITED'S MAJOR SERIES will yield exceptionally long life when operated at rated voltages.

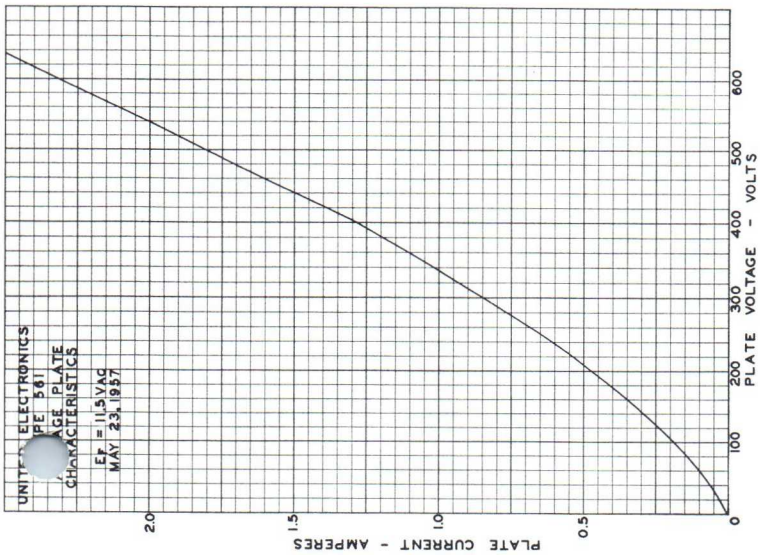
COOLING AND MOUNTING — Operation in excess of 60% of full rated conditions requires a minimum air cooling of 50 CFM. The air should be directed downward against the top of the tube.

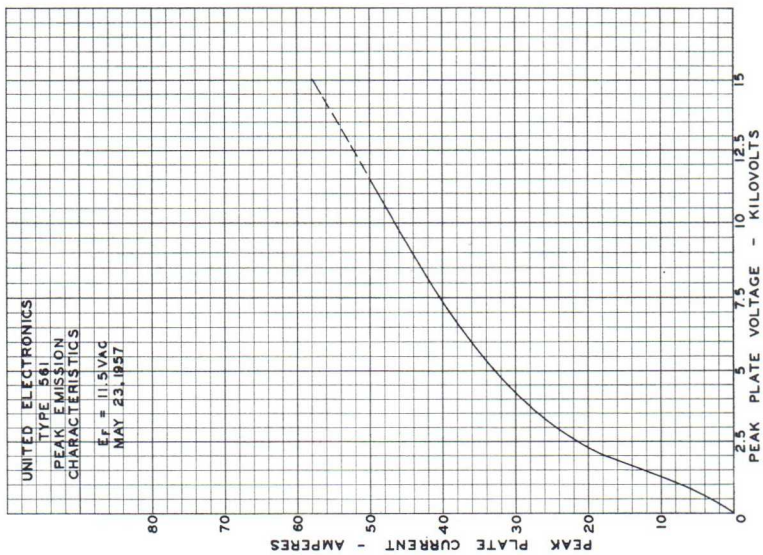
The MAJOR SERIES is designed for vertical mounting with base down. The metal base and all unused pins should be connected externally to one of the filament pins to prevent corona.

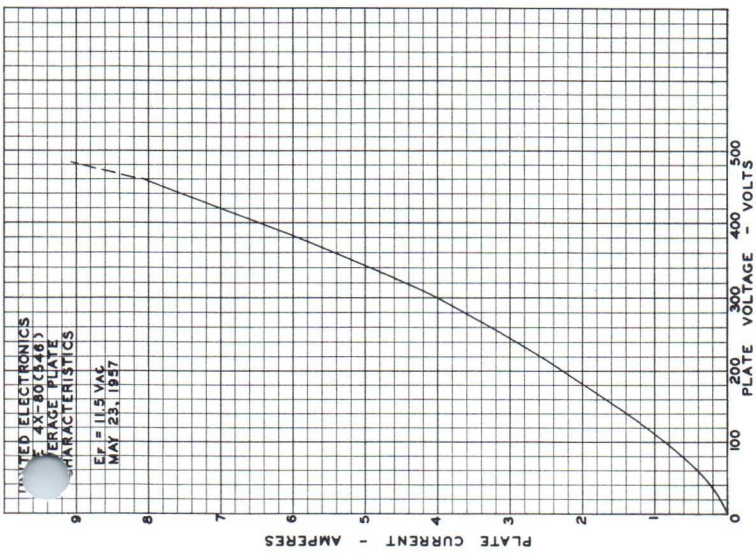
ANODE — Designed for continuous operation with a maximum anode temperature of 800°C, the specially processed UNITED ELECTRONIC GRAPHITE ANODES incorporated in the MAJOR SERIES are characterized by: long gas free life; exceptionally high heat dissipation; absence of hot spots; and the mechanical strength inherent in one piece construction.

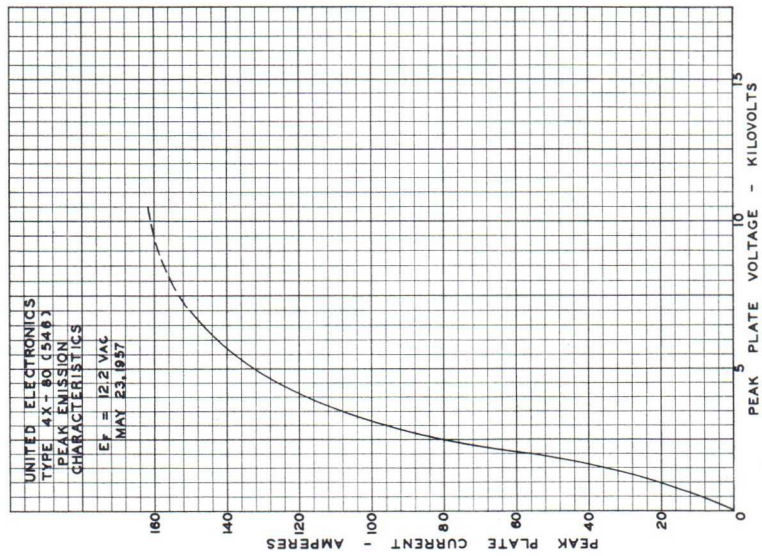
CHARACTERISTICS CURVES

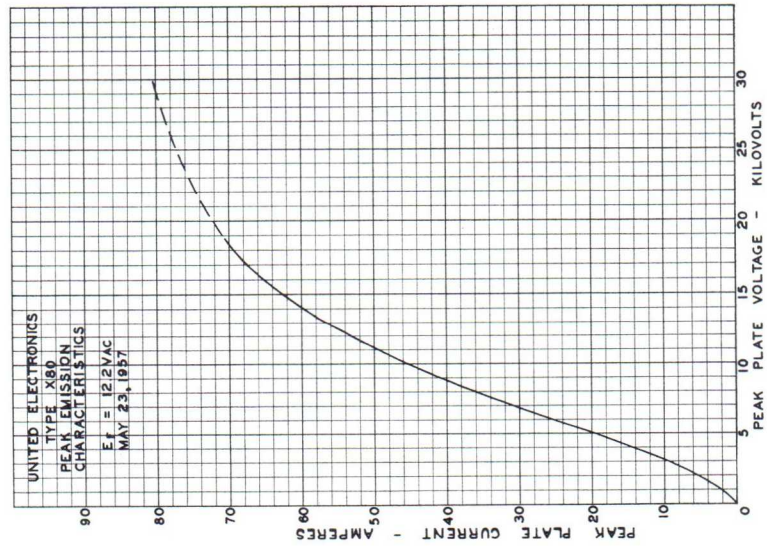
TYPES: X-80, 546 AND 561





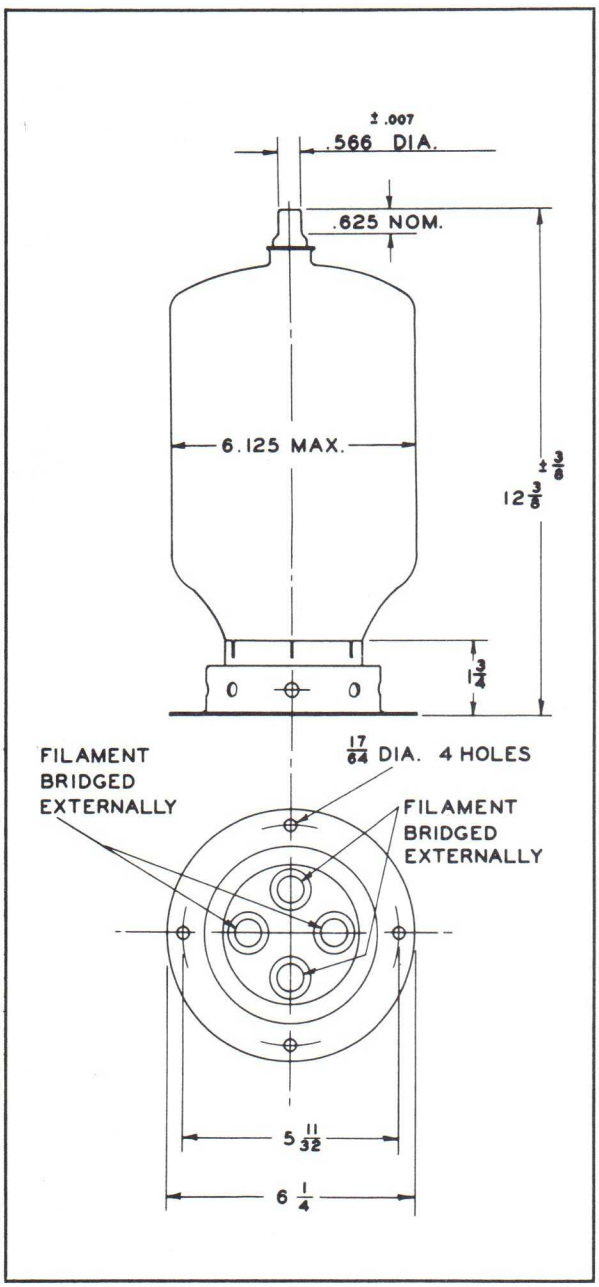




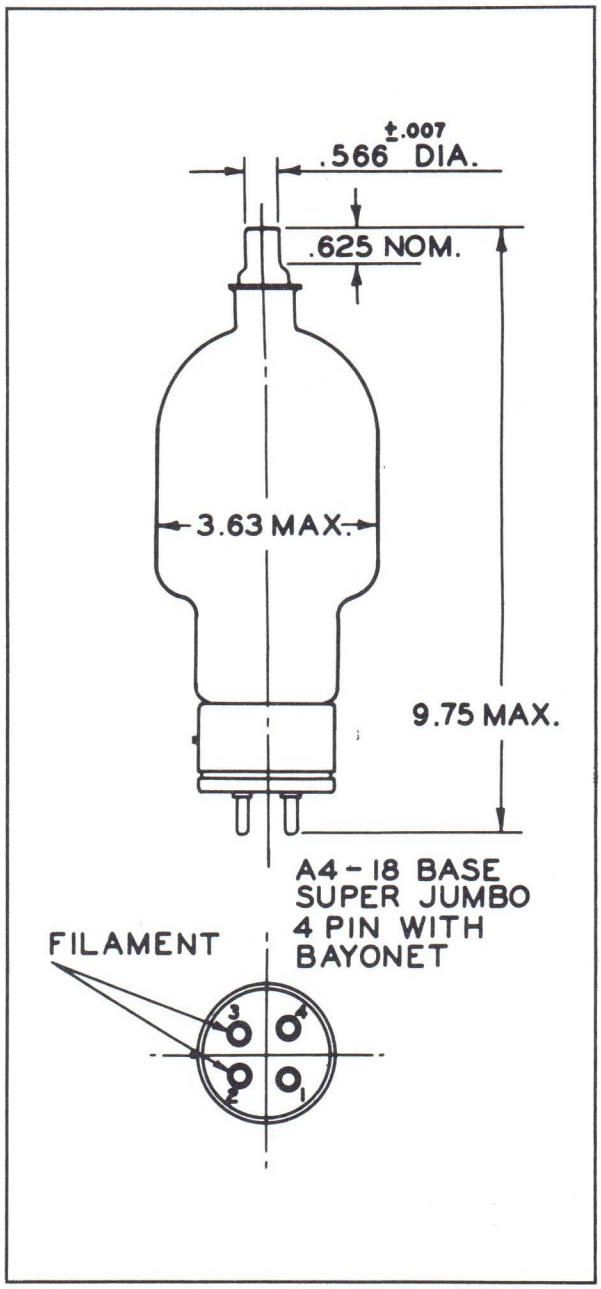


OUTLINE DRAWINGS

TYPE 546



TYPES X-80 & 561



UNITED ELECTRONICS COMPANY

42 SPRING STREET *Since 1934* NEWARK 4, N. J.

UNITED ELECTRONICS COMPANY

ADDRESS REPLY TO:
J. R. CHURCHIN
EXPORT MANAGER
15 MOORE ST. NEW YORK 4, N. Y.

Cable Address
"CHURCHIN" New York

Telephone
BOwling Green 9-6272

PRICES EFFECTIVE OCTOBER 1960

POWER TUBES

TYPE	DESCRIPTION	LIST PRICE (OPTIONAL)	NET PRICE EQUIPMENT MANUFACTURERS
3B24W	Vacuum Rectifier	$ 14.40	$ 8.47
3B24WA	Vacuum Rectifier	25.00	14.71
3B29	Clipper Diode	12.80	7.29
4B32	Xenon Rectifier	15.00	8.82
CV11	Power Triode	19.50	11.53
UXCV11	Power Triode	19.50	11.53
HV18	Power Triode	49.50	29.41
FV20	Power Triode	31.00	19.06
KU23	Power Triode	40.50	29.41
V70D	Power Triode	19.00	12.24
X80	Clipper Diode Rectifier	150.00	97.06
100	Power Triode	26.00	15.88
211W	Power Triode	29.00	22.35
217C	Vacuum Rectifier	25.00	19.41
242C	Power Triode	33.00	21.18
265	Power Triode	52.00	35.30
311CH	Power Triode	29.00	17.65
311CT	Power Triode	29.00	20.59
311T	Power Triode	29.00	20.59
371B	Vacuum Rectifier	15.80	9.29
468	Power Triode	38.00	26.47
541	External Anode Diode	90.00	52.94
543	Vacuum Rectifier	70.00	41.18
545	External Anode Rectifier	56.00	32.94
546	Clipper Diode Rectifier	800.00	470.60
548	External Anode Diode	280.00	164.71
549	Vacuum Rectifier	70.00	41.18
554	External Anode Diode	$ 50.00	$ 32.94
558	Clipper Diode Rectifier	58.00	34.12
561	Clipper Diode Rectifier	175.00	109.41
576A	Clipper Diode Rectifier	29.00	16.47
577	Vacuum Rectifier	24.00	14.12
577W	Vacuum Rectifier	50.00	30.00
578	Vacuum Rectifier	47.00	27.65
582	Vacuum Rectifier	30.00	17.65
583	Clipper Diode	24.00	14.12
589	External Anode Diode	49.00	28.82
593	Vacuum Rectifier	24.00	14.12
596	Full Wave Rectifier	35.00	20.59
705WA	Vacuum Rectifier	60.00	35.30
805	Power Triode	25.00	16.47
810	Power Triode	30.00	21.06
845W	Power Triode	38.00	22.35
872A	Mercury Vapor Rectifier	15.00	9.29
949A	Power Triode	240.00	141.18
966	Mercury Vapor Rectifier	7.00	4.24
973	Thyratron	27.00	17.53
UX973	Thyratron	27.00	17.53
6339	External Anode Diode	46.00	27.06
7159	External Anode Diode	88.00	51.77
7310	Vacuum Rectifier	44.00	25.88
8008	Mercury Vapor Rectifier	15.00	9.29
8008XE	Xenon Rectifier	15.00	8.82
8020	Vacuum Rectifier	22.00	12.94

arrange alphabetically

VACUUM CAPACITORS

TYPE	LIST PRICE (OPTIONAL)	NET PRICE EQUIPMENT MANUFACTURERS
VC6-32	$ 25.00	$ 20.71
VC12-32	25.00	20.71
VC25-32	25.00	22.00
VC50-32	25.00	22.65
VC75-32	30.00	25.88
VC100-32	30.00	27.18
VC150-32	40.00	35.59
VC200-32	55.00	48.53
VC250-32	65.00	58.24
VC500-32	125.00	110.00
VC50-A	32.00	28.82
VC75-A	37.00	32.35
VC100-A	37.00	33.65
VC150-A	46.00	42.06
VC200-A	$ 60.00	$ 55.00
VC250-A	70.00	64.71
VC6-20	22.50	20.06
VC12-20	22.50	20.06
VC25-20	25.00	20.71
VC50-20	25.00	21.35
VC75-20	26.00	23.29
VC100-20	26.00	23.94
VC150-20	35.00	31.06
VC200-20	46.00	41.41
VC250-20	57.00	51.77
VC500-20	115.00	103.53
VC750-20	130.00	116.47

All prices subject to change without notice.
TERMS: 2% Cash Discount
PRICES: Based F.O.B. Factory; Newark, N. J.

UNITED ELECTRONICS