EIMAC TUBES

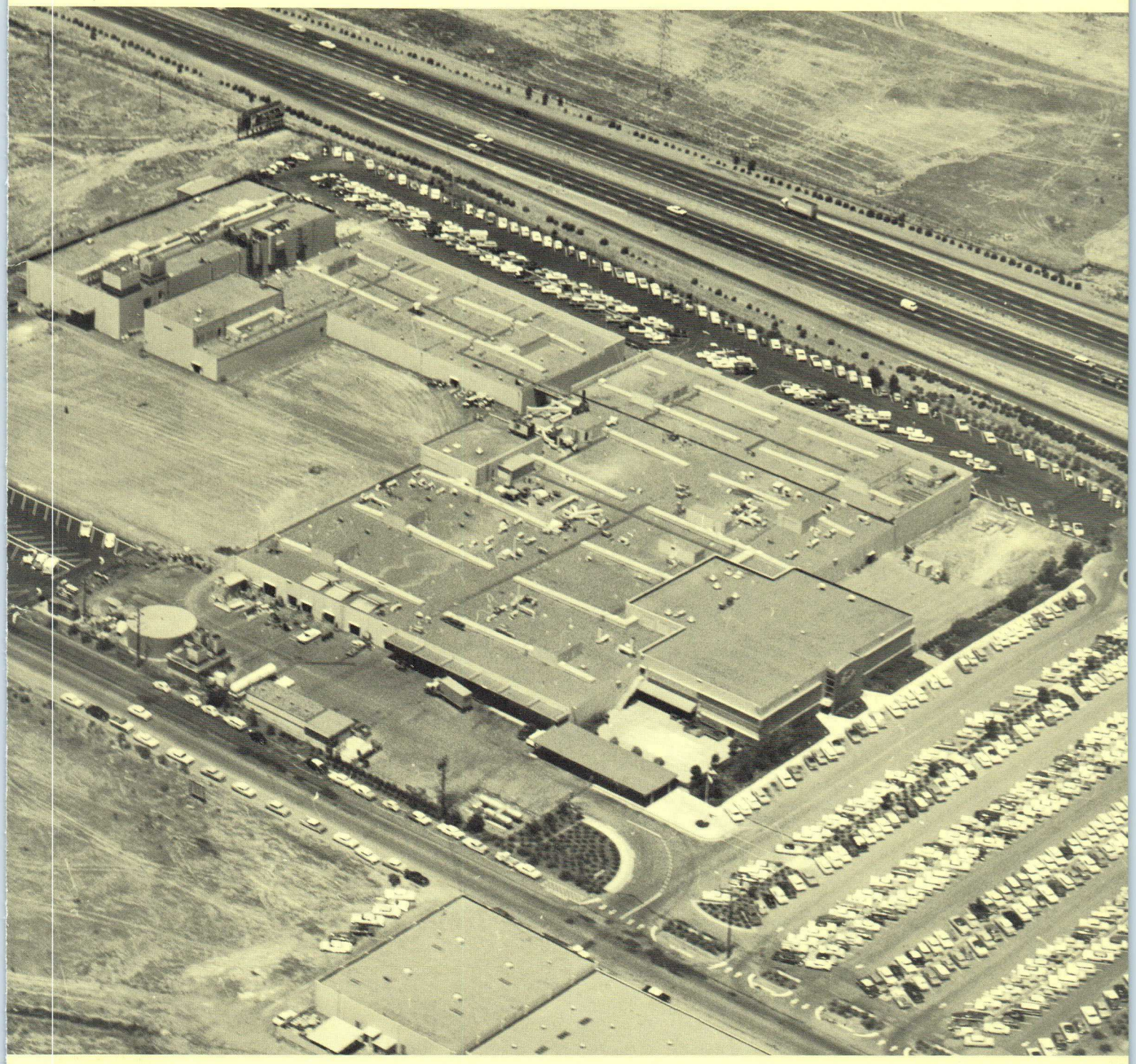
With the
Compliments
of

WALMORE ELECTRONICS LIMITED
11-15 Betterton Street
Drury Lane, London, W.C.2
TEMPLE BAR 0201-5

1963 QUICK REFERENCE CATALOG

Eimac®

QUICK REFERENCE CATALOG




Eimac
EITEL-McCULLOUGH, INC.

THE COMPANY

Eimac electron power tubes, since 1934, have served a constantly expanding variety of needs. They powered the U. S. Navy's early radar experiments at sea in 1938. Radar and communications tubes for the armed services were produced at a rate of 100,000 per month during World War II. Eimac was the first, and remains today the largest manufacturer of ceramic-metal electron power tubes. Eimac tubes power a high proportion of all U. S. radio broadcasting, AM, FM and TV. They powered some of the earliest UHF-TV transmitters, today power most European UHF-TV stations and many in the U. S. As the United States and its allies, in one of mankind's greatest communications achievements, expand the world-wide high-speed defense microwave tropospheric scatter network, Eimac power klystrons continue to power almost every station. Much of the power for the free world's defense radar is generated by Eimac power klystrons. In the space age, Eimac tubes have powered positive radar contact with Venus, accomplished the longest control function in man's history in radio contact with a sun-orbiting satellite. Eimac tubes regularly power reliable radio communications bounced off the moon. Satellite communications network ground stations for worldwide television and defense relay transmission are Eimac-powered.

Rugged new Eimac traveling wave tubes augment the radar response of radio-controlled flying targets, causing them to appear as full size invaders in air defense practice exercises. An expanding variety of Eimac microwave devices of small size and great ruggedness are opening new possibilities for electronic countermeasure, airborne communication equipment, and telemetering.

FACILITIES

At its corporate headquarters in San Carlos, California, Eitel-McCullough, Inc. has built one of the world's most modern plants, exclusively for the design and production of electron power tubes and directly related component products. Power Grid Tubes, High Power Microwave Tubes, advanced Microwave Products, Parts and Accessory Products are manufactured here.

Ceramic-metal fabricating facilities at this plant produce the world's largest output of electron power tubes featuring this most advanced construction method. Under automatic control, this production-tooled facility reliably reproduces ceramic-metal formulations developed and statistically proved over the longest and largest production period in the power tube industry.

At Belmont, California, near the San Carlos plant, is the Eimac High Power Microwave Laboratory, devoted solely to the development of velocity-modulated electron tubes for the ever higher frequencies and powers demanded by advancing technology. Now in use by this lab is Eimac's new million-dollar 3¼ million watt dc power supply.

In Salt Lake City, Utah, Eitel-McCullough, Inc. maintains a facility solely for production of glass Power Grid Tubes for industrial, commercial and defense applications in radar, communications and other equipment.

National Electronics, Inc., a subsidiary of Eitel-McCullough, Inc., produces industrial control tubes, thyratrons, ignitrons and rectifiers, at its Geneva, Illinois facility.

Eitel-McCullough, S.A., international subsidiary of the company, operates from headquarters in Geneva, Switzerland.

PRODUCT INDEX

MICROWAVE TUBE DIVISION

REFLEX KLYSTRONS

VOLTAGE TUNABLE MAGNETRONS

TRAVELING WAVE TUBES

POWER GRID TUBE DIVISION

HIGH POWER MICROWAVE TUBE DIVISION

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C BAND CW

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S BAND CW

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L BAND CW

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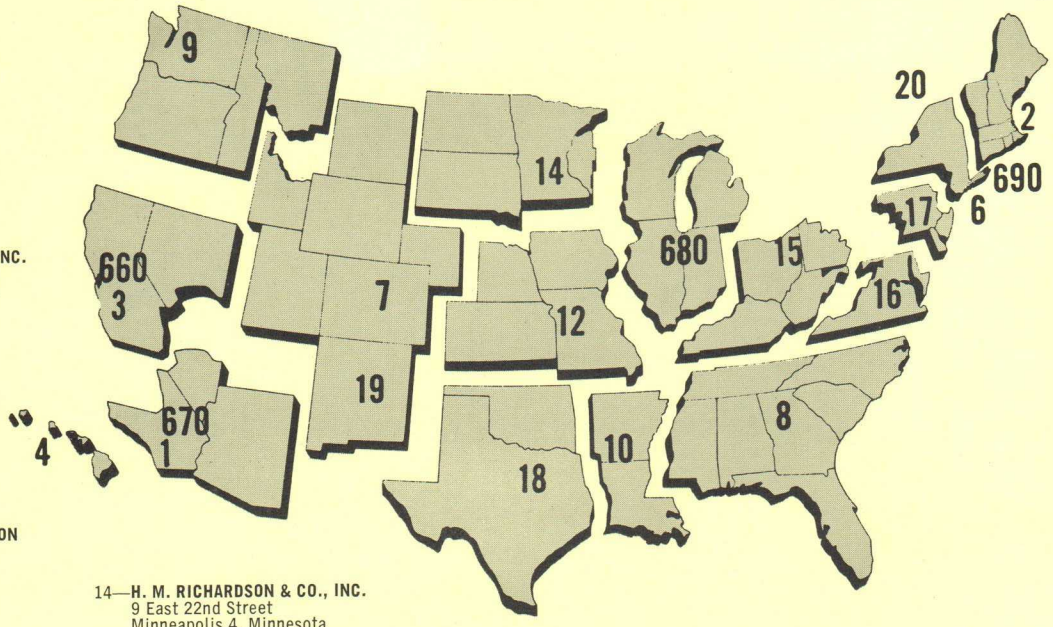

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MR. ROBERT SIFF
Station B
Box 7035
Dayton 7, Ohio
278-4779

WORLD-WIDE REPRESENTATION

EITEL -McCULLOUGH, S.A.
15 rue du Jeu de l'Arc
Geneva, Switzerland
Phone: (022) 35.89.30
Cable: EIMACTUBES, GENEVA

Export Department
EITEL-McCULLOUGH, INC.
San Carlos, California
Phone: 591-1451
Cable: EIMAC SAN CARLOS

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SADELCO
Casilla Correo No. 2693
Buenos Aires, Argentina
Cable: SADELCO, BUENOS AIRES

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and
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Ottawa 14, Ont., Canada
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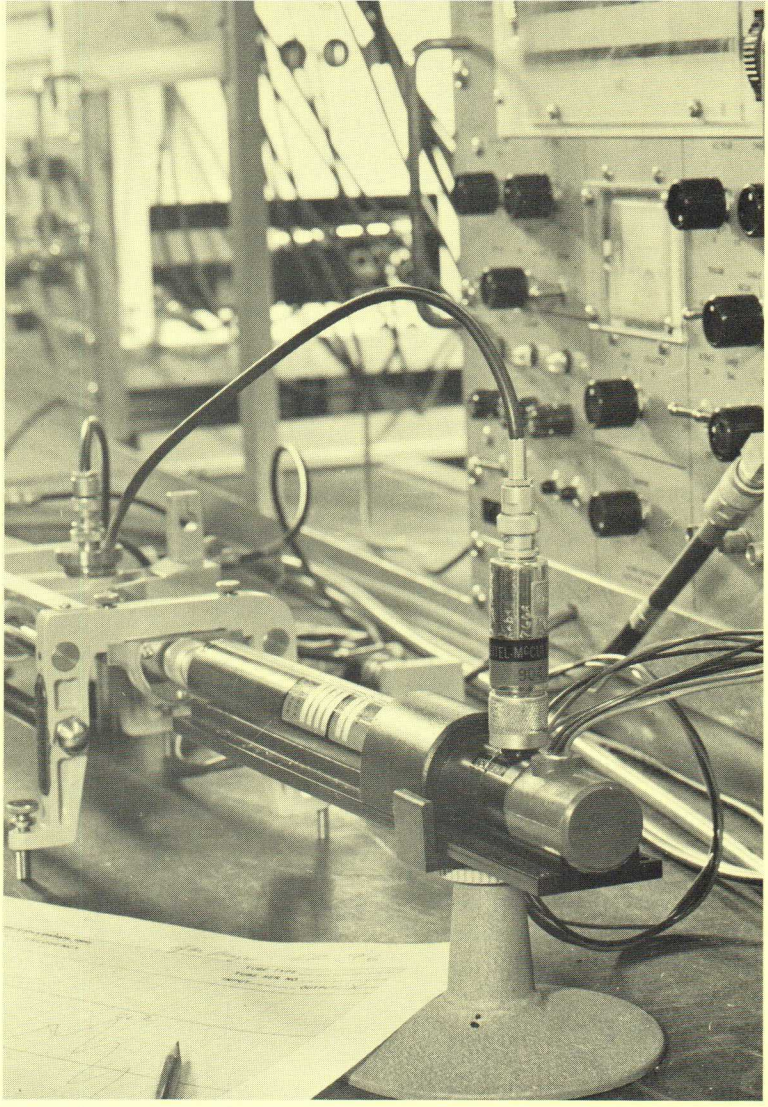


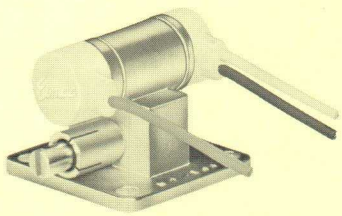
Eitel-McCullough, Inc. manufactures a fast-expanding variety of small-size, low and medium power microwave tubes. Especially notable for reliability under extreme environments, the line includes:

- Reflex Klystrons
- Traveling Wave Tubes
- Voltage Tunable Magnetrons
- Other Advanced Microwave Devices

Advanced Eimac technology in materials, processes and fabrication techniques contributes strongly to the stability, long life and efficiency which are typical of these products. One example—Eimac's practice of rigidly supporting the internal electrodes of microwave structures with stacked ceramic components, resulting in improved performance under shock and vibration.

Serving the growing need for components optimized to one another, in today's aerospace electronic systems, Eimac's Microwave Tube Division is now delivering a line of Iso-Klystrons, reflex klystrons factory-matched to ferrite isolators. Eimac's engineering staff stands ready to construct similar packages of microwave tubes and supporting components, on a quick reaction basis. Improvement in over-all equipment performance and increased project speed are benefits which emerge logically from incorporation of these Eimac component modules in the course of equipment design.

REFLEX KLYSTRONS



1K20XS*

The 1K20 series tubes are ceramic and metal, ruggedized reflex klystrons. Designed for missile-type environments, the tubes feature brazed-joint construction, single-screw tuning and exhibit low residual AM & FM noise. They are especially well suited for local oscillator or parametric amplifier applications.

TUNING RANGE **8.5 - 9.2 Gc**

*1K20XK, also available, covers the adjacent 9.2-10.0 Gc band with similar performance.

MAXIMUM OPERATING ENVIRONMENT

Maximum Ambient	150 °C
Maximum Altitude	No limit
Maximum Shock (11 ms)	40 g
Maximum Vibration (20-2000 cps)	10 g

CHARACTERISTICS

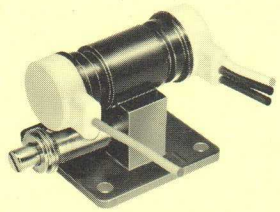
Cathode: Oxide-coated, unipotential	
Heater: Voltage	6.3 volts
Current	0.7 to 1.0 ampere
RF Output	RG-52/U waveguide
Net Weight	4 ounces
Length	2.3 inches
Width	1.6 inches
Depth	1.4 inches

MAXIMUM RATINGS

RESONATOR VOLTAGE	350 Vdc
CATHODE CURRENT	55 mAdc
REPELLER VOLTAGE	−500 Vdc

TYPICAL OPERATION

Mode	5¾	5¾
Frequency	8.85	8.85 Gc
Resonator Voltage	300	350 Vdc
Output Power	70	90 mW
Cathode Current	40	50 mAdc
Repeller Voltage	−150	−135 Vdc
3-db bandwidth	40	40 Mc
Modulation Sens.	1.5	1.5 Mc/v



1K20XD-A

The 1K20XD-A is an improved version of the 1K20XD which features lower current drain and improved tuning linearity. Brazed-joint construction of this metal-ceramic tube provides the ruggedness required for missile-type applications. The 1K20XD-A is especially well-suited for local oscillator or parametric amplifier service.

TUNING RANGE **10.0 - 10.7 Gc**

MAXIMUM OPERATING ENVIRONMENT

Maximum Ambient	150 °C
Maximum Altitude	No limit
Maximum Shock (11 ms)	40 g
Maximum Vibration (20-2000 cps)	10 g

CHARACTERISTICS

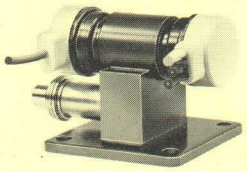
Cathode: Oxide-coated, unipotential	
Heater: Voltage	6.3 volts
Current	0.7 to 1.0 ampere
RF Output	RG-52/U waveguide
Net Weight	4 ounces
Length	2.5 inches
Width	1.6 inches
Depth	1.5 inches

MAXIMUM RATINGS

RESONATOR VOLTAGE	350 Vdc
CATHODE CURRENT	55 mAdc
REPELLER VOLTAGE	−500 Vdc

TYPICAL OPERATION

Mode	5¾	5¾
Frequency	10.35	10.35 Gc
Resonator Voltage	300	350 Vdc
Output Power	50	100 mW
Cathode Current	26	35 mAdc
Repeller Voltage	−165	−150 Vdc
3-db Bandwidth	30	30 Mc
Modulation Sens.	2.0	2.0 Mc/V



1K20XD-S

The 1K20XD-S was designed specifically for microwave relay transmitter or local oscillator service. This tube is a ruggedized, ceramic and metal reflex klystron which features good stability and long-life performance.

TUNING RANGE **10.5 - 11.0 Gc**
MINIMUM OUTPUT **100 mW**
COOLING **Conduction**

MAXIMUM OPERATING ENVIRONMENT

Maximum Ambient	150 °C
Maximum Altitude	No limit
Maximum Shock (11 ms)	40 g
Maximum Vibration (20-2000 cps)	10 g

CHARACTERISTICS

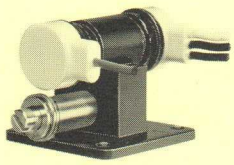
Cathode: Oxide-coated, unipotential	
Heater: Voltage	6.3 volts
Current	0.7 to 1.0 ampere
RF Output	RG-52/U waveguide
Net Weight	4 ounces
Length	2.3 inches
Width	1.6 inches
Depth	1.5 inches

MAXIMUM RATINGS

RESONATOR VOLTAGE	450 Vdc
CATHODE CURRENT	45 mAdc
REPELLER VOLTAGE	−500 Vdc

TYPICAL OPERATION

Mode	6¾	5¾
Frequency	10.75	10.75 Gc
Resonator Voltage	300	400 Vdc
Output Power	30	120 mW
Cathode Current	26	40 mAdc
Repeller Voltage	−165	−175 Vdc
3-db Bandwidth	30	30 Mc
Modulation Sens.	2.0	1.7 Mc/V



1K20XF-A

The Eimac 1K20XF-A is a ceramic and metal reflex klystron designed specifically for use in precision electronic distance measuring equipments. This tube provides excellent tuning linearity and is equipped with a special tuner capable of 10,000 cycles life to facilitate repeated manual tuning.

TUNING RANGE **10.0 - 10.5 Gc**
MINIMUM OUTPUT **50 mW**
TUNER LIFE **10,000 cycles**
COOLING **Conduction**

MAXIMUM OPERATING ENVIRONMENT

Maximum Ambient	150 °C
Maximum Altitude	No limit
Maximum Shock (11 ms)	40 g
Maximum Vibration (20-2000 cps)	10 g

CHARACTERISTICS

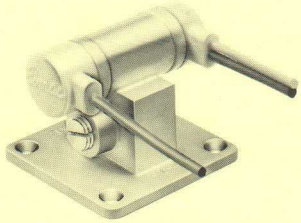
Cathode: Oxide-coated, unipotential	
Heater: Voltage	6.3 volts
Current	0.7 to 1.0 ampere
RF Output	RG-52/U waveguide
Net Weight	4 ounces
Length	2.6 inches
Width	1.6 inches
Depth	1.4 inches

MAXIMUM RATINGS

RESONATOR VOLTAGE	350 Vdc
CATHODE CURRENT	40 mAdc
REPELLER VOLTAGE	−500 Vdc

TYPICAL OPERATION

Mode	5¾
Frequency	10.25 Gc
Resonator Voltage	300 Vdc
Output Power	50 mW
Cathode Current	28 mAdc
Repeller Voltage	90 Vdc
3-db Bandwidth	30 Mc
Modulation Sens	1.5 Mc/V



1K20XL

This ceramic and metal, ruggedized tube was designed specifically for applications demanding improved thermal stability. Reduced AFC requirements for local oscillator or beacon service typify the improved performance offered by the 1K20XL. Tubes which can be trimmed ±100 Mc are available at any required frequency between 9.0 and 10.0 Mc.

TRIMMABLE FREQUENCY **±100 Mc**
FREQUENCY **9.0 to 10.0 Gc**
FREQUENCY DRIFT **10 Mc Maximum over −55 °C to +125 °C**
COOLING **Conduction**

MAXIMUM OPERATING ENVIRONMENT

Maximum Ambient	150 °C
Maximum Altitude	No limit
Maximum Shock (11 ms)	40 g
Maximum Vibration (20-2000 cps)	10 g

CHARACTERISTICS

Cathode: Oxide-coated, unipotential	
Heater: Voltage	6.3 volts
Current	0.7 to 1.0 ampere
RF Output	RG-52/U waveguide
Net Weight	4 ounces
Length	1.75 inches
Width	1.6 inches
Depth	1.4 inches

MAXIMUM RATINGS

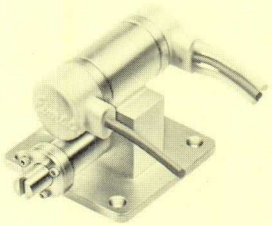
RESONATOR VOLTAGE	350 Vdc
CATHODE CURRENT	60 mAdc
REPELLER VOLTAGE	−500 Vdc

TYPICAL OPERATION

Mode	5¾
Frequency	9.3 Gc
Resonator Voltage	350 Vdc
Output Power	80 mW
Cathode Current	50 mAdc
Repeller Voltage	−115 Vdc
3-db Bandwidth	40 Mc
Modulation Sens.	1.7 Mc/v

NEW PRODUCT

REFLEX KLYSTRONS



1K20XR

The 1K20XR is a ruggedized, ceramic and metal reflex klystron designed for local oscillator service in missile-type environments. It features a sealed, single-screw tuner which allows the external cavity to be pressurized. The temperature coefficient exhibited by the 1K20XR is typically less than ± 100 Kc/°C over the −55°C to +125°C temperature range.

TUNING RANGE 9.2 to 9.6 Gc
MINIMUM OUTPUT 20 mW
COOLING Conduction

MAXIMUM OPERATING ENVIRONMENT

Maximum Ambient	150 °C
Maximum Altitude	No limit
Maximum Shock (11 ms)	40 g
Maximum Vibration (20-2000 cps)	10 g

CHARACTERISTICS

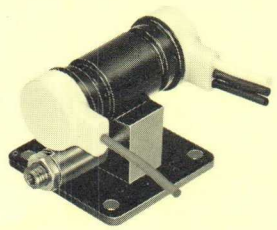
Cathode: Oxide-coated, unipotential	
Heater: Voltage	6.3 volts
Current	0.7 to 1.0 ampere
RF Output	RG-52/U waveguide
Net Weight	4 ounces
Length	2.50 inches
Width	1.6 inches
Depth	1.4 inches

MAXIMUM RATINGS

RESONATOR VOLTAGE	350 Vdc
CATHODE CURRENT	60 mAdc
REPELLER VOLTAGE	−500 Vdc

TYPICAL OPERATION

Mode	6¾
Frequency	9.4 Gc
Resonator Voltage	300 Vdc
Output Power	50 mW
Cathode Current	55 mAdc
Repeller Voltage	−135 Vdc
3-db Bandwidth	60 Mc
Modulation Sens.	1.7 Mc/v



1K20XN-A

The 1K20XN-A is a long-life, trimmable reflex klystron which is especially well-suited for parametric amplifier applications. Easily trimmable ±50 Mc, tubes are available centered at any required frequency. Providing 150 mW output power, the 1K20XN-A offers long-life and dependable service.

TRIMMABLE ± 50 Mc
FREQUENCY 8.5 to 10.7 Gc
MINIMUM OUTPUT 150 mW

MAXIMUM OPERATING ENVIRONMENT

Maximum Ambient	150 °C
Maximum Altitude	No limit
Maximum Shock (11 ms)	40 g
Maximum Vibration (20-2000 cps)	10 g

CHARACTERISTICS

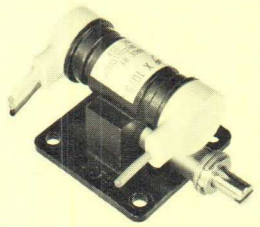
Cathode: Oxide-coated, unipotential	
Heater: Voltage	6.3 volts
Current	0.7 to 1.0 ampere
RF Output	RG-52/U waveguide
Net Weight	4 ounces
Length	2.5 inches
Width	1.6 inches
Depth	1.5 inches

MAXIMUM RATINGS

RESONATOR VOLTAGE	400 Vdc
CATHODE CURRENT	50 mAdc
REPELLER VOLTAGE	−500 Vdc

TYPICAL OPERATION

Mode	5¾	4¾
Frequency	10.6	10.6 Gc
Resonator Voltage	400	400 Vdc
Output Power	100	200 mW
Cathode Current	40	40 mAdc
Repeller Voltage	−130	−290 Vdc
3-db Bandwidth	40	25 Mc
Modulation Sens.	2.0	0.8 Mc/V



X1075

This ruggedized, ceramic and metal tube was designed specifically for radar local oscillator service. Featuring brazed-joint construction and linear mechanical tuning, the tube's long life tuner is well-suited for motor-tuned or remote-tuned applications.

TUNING RANGE 8.5 to 9.6 Gc
MINIMUM OUTPUT 20 mW
COOLING Conduction

MAXIMUM OPERATING ENVIRONMENT

Maximum Ambient	150 °C
Maximum Altitude	No limit
Maximum Shock (11 ms.)	40 g
Maximum Vibration (20-2000 cps)	10 g

CHARACTERISTICS

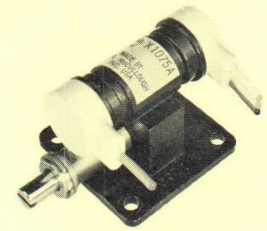
Cathode: Oxide-coated, unipotential	
Heater: Voltage	6.3 volts
Current	0.7 to 1.0 ampere
RF Output	RG-52/U waveguide
Net Weight	5 ounces
Length	2.5 inches
Width	1.6 inches
Depth	1.5 inches

MAXIMUM RATINGS

RESONATOR VOLTAGE	450 Vdc
CATHODE CURRENT	45 mAdc
REPELLER VOLTAGE	−500 Vdc

TYPICAL OPERATION

Frequency	9.05 Gc
Resonator Voltage	250 Vdc
Output Power	30 mW
Cathode Current	20 mAdc
Repeller Voltage	−65 Vdc
3-db Bandwidth	40 Mc
Modulation Sens.	1.5 Mc/V



X1075A

This ruggedized, ceramic and metal tube was designed specifically for radar local oscillator service. Featuring brazed-joint construction and linear mechanical tuning, the tube's long life tuner is well-suited for motor-tuned or remote-tuned applications.

TUNING RANGE 8.5 to 9.6 Gc
MINIMUM OUTPUT 100 mW
COOLING Conduction

MAXIMUM OPERATING ENVIRONMENT

Maximum Ambient	150 °C
Maximum Altitude	No limit
Maximum Shock (11 ms.)	40 g
Maximum Vibration (20-2000 cps)	10 g

CHARACTERISTICS

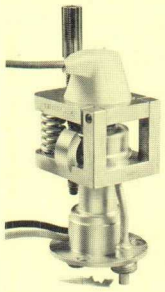
Cathode: Oxide-coated, unipotential	
Heater: Voltage	6.3 volts
Current	0.7 to 1.0 ampere
RF Output	RG-52/U waveguide
Net Weight	5 ounces
Length	2.5 inches
Width	1.6 inches
Depth	1.5 inches

MAXIMUM RATINGS

RESONATOR VOLTAGE	450 Vdc
CATHODE CURRENT	45 mAdc
REPELLER VOLTAGE	−500 Vdc

TYPICAL OPERATION

Frequency	9.05 Gc
Resonator Voltage	400 Vdc
Output Power	100 mW
Cathode Current	40 mAdc
Repeller Voltage	−120 Vdc
3-db Bandwidth	40 Mc
Modulation Sens.	1.5 Mc/v



1K015CA

The ceramic and metal 1K015CA is a ruggedized, internal-cavity reflex klystron designed for local oscillator service. Encapsulated leads provide electrical connections. A single screw-tuner provides a tuning rate of 100 Mc per turn and allows tuner cycling in excess of 100 cycles.

TUNING RANGE 5.35 to 5.95 kMc
MINIMUM OUTPUT 70 mW
COOLING Conduction

MAXIMUM OPERATING ENVIRONMENT

Maximum Ambient	100 °C
Maximum Altitude	No limit
Maximum Shock (11 ms.)	40 g
Maximum Vibration (20 to 2000 cps)	5 g

CHARACTERISTICS

Cathode: Oxide-coated, unipotential	
Heater: Voltage	6.3 volts
Current	0.7 to 1.0 ampere
RF Output	Miniature coaxial jack
Net Weight	4.2 ounces
Maximum Depth	1.19 inches
Maximum Width	1.32 inches
Maximum Length	3.38 inches

MAXIMUM RATINGS

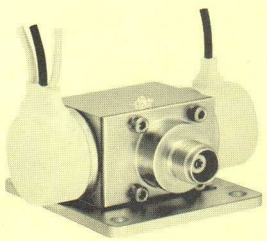
RESONATOR VOLTAGE	350 Vdc
CATHODE CURRENT	55 mAdc
REPELLER VOLTAGE	−500 Vdc

TYPICAL OPERATION

Mode	4¾	3¾
Frequency	5650	5650 Mc
Resonator Voltage	300	350 Vdc
Output Power	35	130 mW
Cathode Current	35	49 mAdc
Repeller Voltage	−135	−240 Vdc
3-db Bandwidth	45	45 Mc
Modulation Sens.	1600	900 kc/v

NEW PRODUCT

REFLEX KLYSTRONS



1K75CH

The 1K75CH is a low-noise, ceramic and metal, ruggedized, reflex klystron designed for fixed-frequency altimeter applications. When the resonator and insulated TNC connector are grounded, the tube may be operated at any altitude without flashover.

FREQUENCY 4300 ± 50 Mc
MINIMUM OUTPUT 1.0 W
COOLING Conduction

MAXIMUM OPERATING ENVIRONMENT

Maximum Ambient	125 °C
Maximum Altitude	40,000 ft
Maximum Shock (11 ms.)	15 g
Maximum Vibration (20 to 2000 cps)	10 g

CHARACTERISTICS

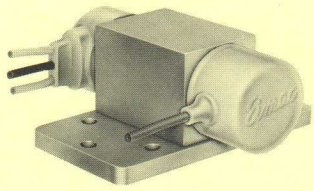
Cathode: Oxide-coated, unipotential	
Heater: Voltage	6.3 volts
Current	1.0 to 1.5 amperes
RF Output	Insulated TNC jack
Net Weight	8.5 ounces
Maximum Depth	1.13 inches
Maximum Width	2.80 inches
Maximum Length	2.51 inches

MAXIMUM RATINGS

RESONATOR VOLTAGE	850 Vdc
CATHODE CURRENT	100 mAdc
REPELLER VOLTAGE	−500 Vdc

TYPICAL OPERATION

Mode	4¾	2¾
Frequency	4300	4300 Mc
Resonator Voltage	550	750 Vdc
Output Power	0.25	1.0 W
Cathode Current	35	60 mAdc
Repeller Voltage	−150	−350 Vdc
3-db Bandwidth	60	30 Mc
Modulation Sens.	1600	160 kc/v



1K75CK

The 1K75CK is a low-noise, ceramic and metal, ruggedized, reflex klystron designed for fixed-frequency altimeter service. Encapsulated, flexible leads allow operation of this tube at any altitude without flashover.

FREQUENCY 4300 ± 50 Mc
MINIMUM OUTPUT 1.0 W
COOLING Conduction

MAXIMUM OPERATING ENVIRONMENT

Maximum Ambient	125 °C
Maximum Altitude	No limit
Maximum Shock (11 ms.)	30 g
Maximum Vibration (20 to 2000 cps)	10 g

CHARACTERISTICS

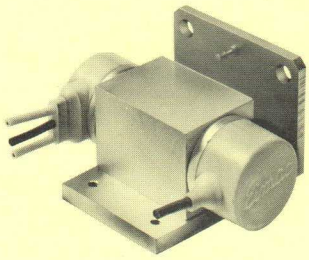
Cathode: Oxide-coated, unipotential	
Heater: Voltage	6.3 volts
Current	1.0 to 1.5 amperes
RF Output	Half-height waveguide
Net Weight	8.0 ounces
Maximum Depth	1.19 inches
Maximum Width	2.80 inches
Maximum Length	2.76 inches

MAXIMUM RATINGS

RESONATOR VOLTAGE	850 Vdc
CATHODE CURRENT	100 mAdc
REPELLER VOLTAGE	−500 Vdc

TYPICAL OPERATION

Mode	4¾	2¾
Frequency	4300	4300 Mc
Resonator Voltage	550	750 Vdc
Output Power	0.25	1.0 W
Cathode Current	35	60 mAdc
Repeller Voltage	−150	−350 Vdc
3-db Bandwidth	60	30 Mc
Modulation Sens.	1600	160 kc/v



1K75CL

The 1K75CL is a low-noise ceramic and metal ruggedized reflex klystron designed for fixed frequency altimeter applications. The mounting-bracket/heat-sink-flange provides efficient heat transfer when the cathode is grounded and the tube body is insulated from the chassis. When the tube body is grounded, the tube may be operated at any altitude without danger of flashover.

FREQUENCY 4300 $^{+75}_{-0}$ Mc
MINIMUM OUTPUT 1.0 Watt
COOLING Conduction

MAXIMUM OPERATING ENVIRONMENT

Maximum Ambient	125 °C
Maximum Altitude	No Limit
Maximum Shock (11ms.)	15 g
Maximum Vibration (10 to 2000 cps)	10 g

CHARACTERISTICS

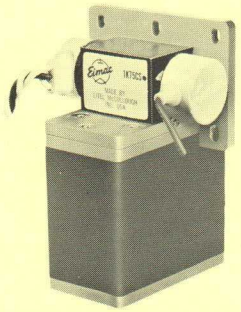
Cathode: Oxide-coated, unipotential	
Heater: Voltage	6.3 volts
Current	1.0 to 1.5 amperes
RF Output	Half-height waveguide
Net Weight	9.0 ounces
Maximum Depth	1.58 inches
Maximum Width	2.80 inches
Maximum Length	2.02 inches

MAXIMUM RATINGS

RESONATOR VOLTAGE	900 volts
CATHODE CURRENT	85 mAdc
REPELLER VOLTAGE	−500 volts

TYPICAL OPERATION

Mode	2¾
Frequency	4337 Mc
Resonator Voltage	750 Vdc
Output Power	1.0 W
Cathode Current	60 mAdc
Repeller Voltage	−330 Vdc
3 db Bandwidth	30 Mc
Modulation Sens.	160 kc/v



1K75CS

The Eimac 1K75CS is a ruggedized, load-insensitive reflex klystron/isolator package designed for fixed-frequency altimeter service. Operating in the 4¾ mode, the 1K75CS provides more than 300 mW and 100 Mc electronic tuning range into a load VSWR of 2:1 with only 8 Mc maximum frequency pulling. Alternately, this tube can be factory preset to provide approximately 1 watt and 30 Mc electronic tuning range.

FREQUENCY 4300 ± 50 Mc
MINIMUM OUTPUT 1.0 Watt
COOLING Heat Sink

MAXIMUM OPERATING ENVIRONMENT

Maximum Ambient	125 °C
Maximum Altitude	No limit
Maximum Shock (11 ms.)	15 g
Maximum Vibration (20 to 2000 cps)	10 g

CHARACTERISTICS

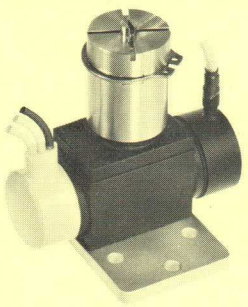
Cathode: Oxide-coated, unipotential	
Heater: Voltage	6.3 volts
Current	1.0 to 1.5 amperes
RF Output	Half-height waveguide
Net Weight	1.5 pounds max.
Maximum Depth	4.16 inches
Maximum Width	2.81 inches
Maximum Length	2.76 inches

MAXIMUM RATINGS

RESONATOR VOLTAGE	900 volts
CATHODE CURRENT	85 mAdc
REPELLER VOLTAGE	−500 volts

TYPICAL OPERATION

Mode	4¾
Frequency	4300 Mc
Resonator Voltage	700 Vdc
Output Power	325 mW
Cathode Current	55 mAdc
Repeller Voltage	−85 Vdc
3-db Bandwidth	110 Mc
Modulation Sens.	3.0 Mc/V



X1079

The X1079 is a rugged, metal and ceramic reflex klystron designed for missile-type environments. This low-noise tube is tunable over any specified 400 Mc portion of the 4 - 6 Gc range. The X1079 can be provided with an integral coaxial or waveguide isolator for improved stability due to reduced sensitivity to load changes. Expected life is in excess of 5000 hours.

TUNING 400 Mc
FREQUENCY 4 - 6 Gc
MINIMUM OUTPUT 100 mW

MAXIMUM OPERATING ENVIRONMENT

Maximum Heat Sink Temperature	100 °C
Maximum Altitude	No limit
Shock (11 ms.)	40 g
Vibration (20-2000 cps)	5 g

CHARACTERISTICS

Cathode: Oxide-coated, unipotential	
Heater: Voltage	6.3 volts
Current	0.7 - 1.1 amperes
RF Output	Half Height Waveguide or TNC
Net Weight (approx.)	22 ounces

MAXIMUM RATINGS

RESONATOR VOLTAGE	800 Vdc
CATHODE CURRENT	70 mAdc
REPELLER VOLTAGE	−500 Vdc

TYPICAL OPERATION

Mode	4¾
Frequency	4700 Mc
Resonator Voltage	550 Vdc
Output Power	225 mW
Cathode Current	35 mAdc
Repeller Voltage	−85 Vdc
3-db Bandwidth	50 Mc
Modulation Sens.	1.5 Mc/V

NEW PRODUCT

REFLEX KLYSTRONS

1K125CA

The 1K125CA is a low-noise ceramic and metal reflex klystron designed for use as an oscillator or transmitter in communication service. Tuner cycling in excess of 1000 cycles, with a tuning rate of 100 Mc per turn, is provided by the bellows-coupled, dielectric tuner.

TUNING RANGE	**3.7 to 4.4 kMc**
MINIMUM OUTPUT	**1.25 W**
COOLING	**Forced Air**

MAXIMUM OPERATING ENVIRONMENT

Maximum Ambient	50 °C
Maximum Altitude	10,000 ft
Maximum Shock (1 ms.)*	80 g
Maximum Vibration (120 sec. 40 cps)*	10 g

*Non-operating specification

CHARACTERISTICS

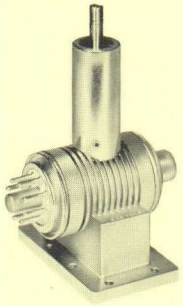
Cathode: Oxide-coated, unipotential	
Heater: Voltage	6.3 volts
Current	1.0 to 1.5 amperes
RF Output	RG-49/U waveguide
Net Weight	18 ounces
Maximum Depth	3.3 inches
Maximum Width	2.8 inches
Maximum Length	4.4 inches
Air-Flow Rate (50°C.)	10 cfm

MAXIMUM RATINGS

RESONATOR VOLTAGE	1000 Vdc
CATHODE CURRENT	110 mAdc
REPELLER VOLTAGE	−750 Vdc

TYPICAL OPERATION

Mode	2¾
Frequency	4050 Mc
Resonator Voltage	1000 Vdc
Output Power	1.6 W
Cathode Current	75 mAdc
Repeller Voltage	−275 Vdc
3-db Bandwidth	28 Mc
Modulation Sens.	310 kc/v



1K125CB

The 1K125CB is a low-noise, ceramic and metal, reflex klystron designed for use as an oscillator or transmitter in communication service. Tuner cycling in excess of 1000 cycles, with a tuning rate of 100 Mc per turn, is provided by the bellows-coupled, dielectric tuner.

TUNING RANGE	**4.4 to 5.0 kMc**
MINIMUM OUTPUT	**1.8 W**
COOLING	**Forced Air**

MAXIMUM OPERATING ENVIRONMENT

Maximum Ambient	50 °C
Maximum Altitude	10,000 ft
Maximum Shock (1 ms.)*	80 g
Maximum Vibration (120 sec. 40 cps)*	10 g

*Non-operating specification

CHARACTERISTICS

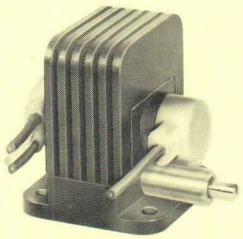
Cathode: Oxide-coated, unipotential	
Heater: Voltage	6.3 volts
Current	1.0 to 1.5 amperes
RF Output	RG-49/U waveguide
Net Weight	18 ounces
Maximum Depth	2.8 inches
Maximum Width	3.3 inches
Maximum Length	4.4 inches
Air-Flow Rate (50°C.)	10 cfm

MAXIMUM RATINGS

RESONATOR VOLTAGE	1000 Vdc
CATHODE CURRENT	110 mAdc
REPELLER VOLTAGE	−750 Vdc

TYPICAL OPERATION

Mode	3¾	2¾
Frequency	4700	4700 Mc
Resonator Voltage	800	1000 Vdc
Output Power	0.77	2.5 W
Cathode Current	55	75 mAdc
Repeller Voltage	−130	−345 Vdc
3-db Bandwidth	50	32 Mc
Modulation Sens.	700	290 kc/v



X1115A*

The Eimac X1115A is a ruggedized, ceramic-metal reflex klystron designed for transmitter/local-oscillator service in commercial microwave relay equipments. It is also recommended for parametric amplifier pump applications which demand stable, reliable performance in unattended service. The tube is warranted for 1,000 hours.

TUNING RANGE	**12.2 - 12.7 Gc***
MINIMUM OUTPUT	**100 mW**
COOLING	**Conduction**

MAXIMUM OPERATING ENVIRONMENT

Maximum Ambient	150 °C
Maximum Altitude	No limit
Maximum Shock (11 ms)	40 g
Maximum Vibration (20-2000 cps)	10 g

CHARACTERISTICS

Cathode: Oxide-coated, unipotential	
Heater: Voltage	6.3 volts
Current	0.7 to 1.0 ampere
RF Output	WR-75 waveguide
Net Weight	4 ounces
Length	2.3 inches
Width	1.5 inches
Depth	1.80 inches

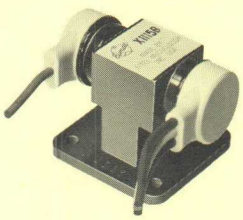
MAXIMUM RATINGS

RESONATOR VOLTAGE	500 Vdc
CATHODE CURRENT	50 mAdc
REPELLER VOLTAGE	−500 Vdc

TYPICAL OPERATION

Mode	5¾
Frequency	12.450 Gc
Resonator Voltage	400 Vdc
Output Power	150 mW
Cathode Current	40 mAdc
Repeller Voltage	−120 Vdc
3-db Bandwidth	40 Mc
Modulation Sens.	1.5 Mc/V

*X1116A, also available, covers the adjacent 11.7-12.2 Gc band with identical performance.



X1115B*

The X1115B is a ruggedized, ceramic-metal reflex Klystron designed for local-oscillator service in commercial microwave relay equipments. The X1115B is warranted for 1000 hours and should exhibit many times this in normal operation, thereby enhancing system reliability.

TUNING RANGE	**12.2 - 12.7 Gc***
MINIMUM OUTPUT	**30 mW**
COOLING	**Conduction**

MAXIMUM OPERATING ENVIRONMENT

Maximum Ambient	150 °C
Maximum Altitude	No limit
Maximum Shock (11 ms)	40 g
Maximum Vibration (20-2000 cps)	10 g

CHARACTERISTICS

Cathode: Oxide-coated, unipotential	
Heater: Voltage	6.3 volts
Current	0.7 to 1.0 ampere
RF Output	WR-75 waveguide
Net Weight	4 ounces
Length	2.3 inches
Width	1.5 inches
Depth	1.35 inches

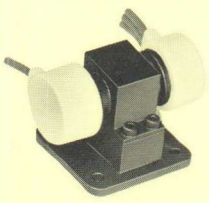
MAXIMUM RATINGS

RESONATOR VOLTAGE	400 Vdc
CATHODE CURRENT	40 mAdc
REPELLER VOLTAGE	−500 Vdc

TYPICAL OPERATION

Mode	6¾
Frequency	12.450 Gc
Resonator Voltage	300 Vdc
Output Power	45 mW
Cathode Current	25 mAdc
Repeller Voltage	−150 Vdc
3-db Bandwidth	30 Mc
Modulation Sens.	2.0 Mc/V

*X1116B, also available, covers the adjacent 11.7-12.2 Gc band with identical performance.



X1120

The X1120 is a rugged Ku-Band reflex klystron which is well-suited for doppler navigator or parametric amplifier pump applications. The X1120 provides high output power, good stability and exceptionally long life. Trimmable ±50 Mc, the X1120 is available at any frequency between 12.5 and 14.5 Gc.

TRIMMABLE	**±50 Mc**
FREQUENCY	**12.5 to 14.5 Gc**
MINIMUM OUTPUT	**200 mW**
COOLING	**Forced air or heat sink**

MAXIMUM OPERATING ENVIRONMENT

Maximum Ambient	150 °C
Maximum Altitude	No limit
Maximum Shock (11 ms)	40 g
Maximum Vibration (20-2000 cps)	10 g

CHARACTERISTICS

Heater: Voltage	6.3 volts
Current	1.0 to 1.5 amperes
RF Output	WR-75 waveguide
Net Weight	4 ounces
Maximum Length	2.5 inches
Maximum Width	1.6 inches
Maximum Depth	1.5 inches

MAXIMUM RATINGS

RESONATOR VOLTAGE	700 Vdc
CATHODE CURRENT	75 mAdc
REPELLER VOLTAGE	−500 Vdc

TYPICAL OPERATION

Frequency	13.6 Gc
Resonator Voltage	400 V
Output Power	250 mW
Cathode Current	45 mA
Repeller Voltage	−290 Vdc
3-db Bandwidth	40 Mc
Modulation Sens.	1.0 Mc/V

NEW PRODUCT

EM-SERIES TRAVELING WAVE TUBES

Eimac, during recent years, has developed the series of traveling wave tubes shown below. The EM-778, forerunner tube in the series, is in large quantity production. The EM-series is available to meet a wide variety of applications.

These tubes are of ceramic and metal construction and have been designed to satisfy military missile environments without shock mounting. The tubes need no cooling, other than the heat-sink, in most applications. The ruggedness of the EM-series stems from their unique internal construction. The helix is supported by ceramic rods held rigidly in a stainless steel tube by patented molybdenum supports. The gun is of stacked ceramic construction, proved in years of similar service.

The advanced rf design eliminates the usual input and output transformer sections. The elimination of these frequency-limiting couplers results in tubes with ample bandwidths and a minimum of power variation over the band.

In addition to the tubes shown below, a number of modifications of these types exist. For example, tubes can be supplied in serrodynable or gridded versions. For tubes custom tailored to your requirements, get in touch with your Eimac factory representative or directly with Microwave Marketing, Eitel-McCullough, Inc., San Carlos, California.

CHARACTERISTICS

Cathode: Oxide, unipotential
Heater:
- Voltage 6.3 volts
- Current 0.6 ampere

Focusing: Periodic Permanent Magnet
Noise Figure: 25 - 34 db
RF Connections:
- Input Type N
- Output Type N

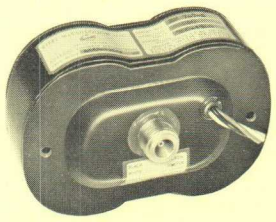
TYPICAL OPERATION

Type	Frequency	Output Power Saturation	Small Signal Gain	Anode Voltage	Cathode Current	Focus Electrode Voltage
EM-778	5.0-11.0 Gc	1 W	60 db	2900 Vdc	23 ma	—30 Vdc
EM-779	5.0-11.0 Gc	1 W	30 db	2950 Vdc	23 ma	—30 Vdc
EM-1006	2.0-4.0 Gc	1 W	50 db	1250 Vdc	35 ma	—10 Vdc
X1008	2.5-3.8 Gc	1 W	55 db	1250 Vdc	35 ma	—10 Vdc
EM-1010	4.0-8.0 Gc	1 W	60 db	2900 Vdc	23 ma	—30 Vdc
EM-1011	4.0-8.0 Gc	1 W	30 db	2950 Vdc	23 ma	—30 Vdc
EM-1015	4.0-8.0 Gc	3 W	60 db	2450 Vdc	28 ma	—40 Vdc
EM-1016	4.0-8.0 Gc	3 W	30 db	2450 Vdc	28 ma	—40 V dc
EM-1020	4.0-8.0 Gc *	20 W	40 db	2850 Vdc	80 ma	—30 Vdc
EM-1021	4.0-8.0 Gc	10 W	40 db	2850 Vdc	80 ma	—30 Vdc
EM-1025	4.0-12.0 Gc	1 W	40 db	2900 Vdc	23 ma	—30 Vdc
EM-1030	7.0-11.0 Gc	5 W	60 db	3200 Vdc	30 ma	—30 Vdc
EM-1031	7.0-11.0 Gc	5 W	30 db	3200 Vdc	30 ma	—30 Vdc
EM-1045	8.0-12.0 Gc	1 W	60 db	2950 Vdc	23 ma	—30 Vdc
EM-1046	8.0-12.0 Gc	1 W	30 db	2950 Vdc	23 ma	—30 Vdc
EM-1050	8.0-12.0 Gc	3 W	60 db	3300 Vdc	28 ma	—40 Vdc
EM-1051	8.0-12.0 Gc	3 W	30 db	3300 Vdc	28 ma	—40 Vdc
EM-1060	2.5-11.0 Gc	0.5 W	30 db	2950 Vdc	23 ma	—30 Vdc

*Will give performance shown over any 500 Mc band from 4.0 to 8.0 Gc.

NEW PRODUCT

VTM



EM-747

The Eimac EM-747 is an environmentally improved version of the X-747 voltage tunable magnetron. Rugged ceramic and metal construction coupled with new packaging techniques enable the EM-747 to perform under military missile-type environments. Both size and weight have been reduced. Forced air cooling is no longer required.

Bandwidths up to 3 to 1 and highly linear tuning make the EM-747 an especially appropriate choice as a microwave generator for signal source or ECM applications requiring a long-life, swept-frequency oscillator.

For transmitter service, this tube will deliver output powers of 5 watts over somewhat reduced bandwidth. Alternately, 400-1200 Mc bandwidth can be provided with 50 mW output power on special order.

ELECTRONIC TUNING RANGE 450 - 1150 Mc
MINIMUM OUTPUT 50 mW
COOLING Conduction

CHARACTERISTICS

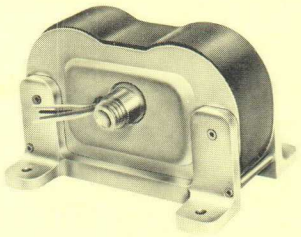
Cathode: Unipotential, matrix
Heater:
Voltage (ac or dc) 6.3 volts
Current 0.8 ampere
RF Output: Type N or TNC Female
Net Weight 3.5 lbs. max.
(including magnet and r.f. circuitry)
Maximum Height 3 inches
Maximum Width 2.125 inches
Maximum Length 4.875 inches

MAXIMUM RATINGS

ANODE VOLTAGE	2000 Vdc
CATHODE CURRENT	20 mAdc
INJECTION ANODE VOLTAGE	500 Vdc
INJECTION ANODE CURRENT	1 mAdc

TYPICAL OPERATION

Frequency	450 - 1150 Mc
Anode Voltage	700 - 1900 Vdc
Cathode Current	2 - 10 mAdc
Injection Anode Voltage	150 Vdc
Injection Anode Current	0.1 mAdc
Tuning Rate	0.65 Mc/v
Minimum Output Power	50 mW



X1080

The X1080 is a newly developed metal and ceramic VTM which provides a minimum of 100 mW over 1200 - 2200 Mc. Almost identical to the EM-747 in construction and operation, it is well suited for missile-type environmental service. Temperature compensation for better frequency stability is available on special order.

ELECTRONIC TUNING RANGE 1200 - 2200 Mc
MINIMUM OUTPUT 100 mW
COOLING Conduction

CHARACTERISTICS

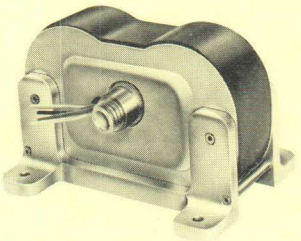
Cathode: Unipotential, matrix
Heater:
Voltage (ac or dc) 6.3 volts
Current 0.8 ampere
RF Output: Type N or TNC Female
Net Weight 4 lbs. max.
(including magnet and rf circuitry)
Maximum Height 3 inches
Maximum Width 2.125 inches
Maximum Length 4.875 inches

MAXIMUM RATINGS

ANODE VOLTAGE	1500 Vdc
CATHODE CURRENT	25 mAdc
INJECTION ANODE VOLTAGE	500 Vdc
INJECTION ANODE CURRENT	1 mAdc

TYPICAL OPERATION

Frequency	1200 - 2200 Mc
Anode Voltage	800 - 1400 Vdc
Cathode Current	4 - 12 mAdc
Injection Anode Voltage	350 Vdc
Injection Anode Current	0.1 mAdc
Tuning Rate	1.7 Mc/v
Minimum Power Output	100 mW



X1081

Eimac's first higher powered L-band VTM is now available to system designers. Providing 10 watts minimum CW power from 900 to 1200 Mc, the X1081 features the same rugged construction as the EM-747 and the X1080 VTM's.

The high efficiency (35% typical) exhibited by the X1081 eases power supply demands for airborne/missile applications; filaments are designed to operate from standard 6.3 volt supplies. X1081 may be optimized for 15 watts CW power at higher efficiency with 10 - 12 percent bandwidth.

ELECTRONIC TUNING RANGE 900 - 1200 Mc
MINIMUM OUTPUT 10 W
COOLING Forced Air

CHARACTERISTICS

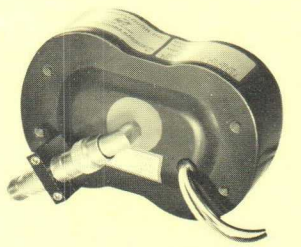
Cathode: Unipotential, matrix
Heater:
Voltage (ac or dc) 6.3 volts
Current 0.8 ampere
RF Output: Type N or TNC Female
Net Weight 4 lbs. max.
(including magnet and rf circuitry)
Maximum Height 3 inches
Maximum Width 2.125 inches
Maximum Length 4.5 inches

MAXIMUM RATINGS

ANODE VOLTAGE	2300 Vdc
CATHODE CURRENT	35 mAdc
INJECTION ANODE VOLTAGE	1000 Vdc
INJECTION ANODE CURRENT	1 mAdc

TYPICAL OPERATION

Frequency	900 - 1200 Mc
Anode Voltage	1800 - 2350 Vdc
Cathode Current	16 - 25 mAdc
Injection Anode Voltage	400 Vdc
Injection Anode Current	0.5 mAdc
Tuning Rate	0.55 Mc/v
Minimum Power Output	10 W



X1083 and X1088

Designed for both local oscillator and low noise signal generator, the X1083 and X1088 voltage tunable magnetrons cover the frequency range of 320 to 525 megacycles and 520 to 925 megacycles with a minimum power output of 32 milliwatts. Special design features include low A-M noise characteristics and the capability of operation into a 4:1 mismatch with minimum performance degradation. Rugged ceramic construction in conjunction with new packaging techniques enable these VTM's to perform under severe missile environments. Linear tuning eliminates complex sweep circuits. These tubes are temperature-compensated for minimum frequency drift. F-M under vibration is extremely low due to a unique heater-cathode design.

	X1083	X1088
ELECTRONIC TUNING RANGE	320 - 525 Mc	520 - 925 Mc
MINIMUM OUTPUT	30 mW	
COOLING	Conduction	

CHARACTERISTICS

Cathode: Unipotential, matrix
Heater:
Voltage (ac or dc) 6.3 volts
Current 0.8 ampere
RF Output: TNC Female
Net Weight 4 lbs. max.
(including magnet and rf circuitry)
Maximum Height 3 inches
Maximum Width 2.3125 inches
Maximum Length 4.5 inches

MAXIMUM RATINGS

ANODE VOLTAGE	2500 Vdc
CATHODE CURRENT	10 mAdc
INJECTION ANODE VOLTAGE	500 Vdc
INJECTION ANODE CURRENT	1 mAdc

TYPICAL OPERATION

	X1083	X1088
Frequency	320 - 525	520 - 925 Mc
Anode Voltage	1230 - 2000	970 - 1655 Vdc
Cathode Current	.5 - 1.5	2 - 4 mAdc
Injection Anode Voltage	200	200 Vdc
Injection Anode Current	.02	.02 mAdc
Tuning Rate	0.35	0.55 Mc/V
Minimum Power Output	32	32 mW

NEW PRODUCT

VTM

X1085

The X1085 voltage tunable magnetron weighs only 2 pounds, tunes from 1200 to 1400 Mc, and its ceramic-metal construction enables it to withstand severe missile environments. Normal power output is 100 mW with conduction cooling. A modified version, available on request, has a minimum power output of 1 W using forced air cooling. Specifications for the modified version are indicated below in **bold-face type.**

ELECTRONIC TUNING RANGE 1200 - 1400 Mc

MINIMUM OUTPUT 100 mW **1 W**

COOLING Conduction **Forced Air**

CHARACTERISTICS

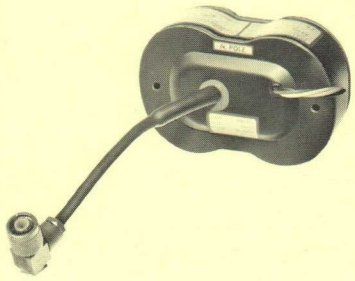
Cathode: Unipotential, matrix	
Heater:	
Voltage (ac or dc)	6.3 volts
Current	0.8 ampere
RF Output: Type TNC	
Net Weight (including magnet and rf circuitry)	2 lbs. max.
Maximum Height	2.25 inches
Maximum Width	2.11 inches
Maximum Length	3.875 inches

MAXIMUM RATINGS

ANODE VOLTAGE	1500 Vdc **2500 Vdc**
CATHODE CURRENT	12 mAdc **20 mAdc**
INJECTION ANODE VOLTAGE	500 Vdc
INJECTION ANODE CURRENT	1 mAdc

TYPICAL OPERATION

Frequency	1200 - 1400 Mc
Anode Voltage	840 - 970 Vdc **1150 - 2000 Vdc**
Cathode Current	2 - 8 mAdc **4 - 8 mAdc**
Injection Anode Voltage	200 Vdc **500 Vdc**
Injection Anode Current	.5 mAdc
Tuning Rate	1.2 Mc/V **.8 Mc/V**
Minimum Power Output	100 mW **1 W**



EM1086

The EM1086 is an optimized version of the X1081. It operates in L-band 940 to 1060 Mc with a minimum power output of 15 W. Ceramic-metal construction insures dependable operation in extreme environments.

ELECTRONIC TUNING RANGE 940 - 1060 Mc

MINIMUM OUTPUT 15 W

COOLING Forced Air

CHARACTERISTICS

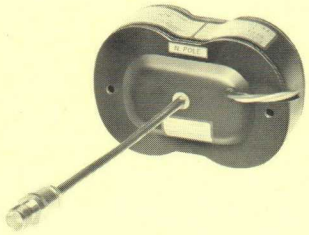
Cathode: Unipotential, matrix	
Heater:	
Voltage (ac or dc)	6.3 volts
Current	0.8 ampere
RF Output: Type TNC Flying Cable	
Net Weight (including magnet and rf circuitry)	4 lbs. max.
Maximum Height	3 inches
Maximum Width (excluding rf cable)	2.125 inches
Maximum Length	4.5 inches

MAXIMUM RATINGS

ANODE VOLTAGE	2500 Vdc
CATHODE CURRENT	35 mA
INJECTION ANODE VOLTAGE	750 Vdc
INJECTION ANODE CURRENT	1 mA

TYPICAL OPERATION

Frequency	940 - 1060 Mc
Anode Voltage	1820 - 2060 Vdc
Cathode Current	24 - 26.5 mAdc
Injection Anode Voltage	500 Vdc
Injection Anode Current	.02 mAdc
Tuning Rate	0.5 Mc/V
Minimum Power Output	15 W



X1087

The X1087 is especially suited for severe environments and operates at a center frequency of 560 Mc with a 16% bandwidth and a minimum power output of 10 W.

ELECTRONIC TUNING RANGE 515 - 605 Mc

MINIMUM OUTPUT 10 W

COOLING Forced Air

CHARACTERISTICS

Cathode: Unipotential, matrix	
Heater:	
Voltage (ac or dc)	6.3 volts
Current	0.8 ampere
RF Output: Type TNC Female Flying Cable	
Net Weight (including magnet and rf circuitry)	4 lbs. max.
Maximum Height	3 inches
Maximum Width (excluding rf connector)	2.125 inches
Maximum Length	4.5 inches

MAXIMUM RATINGS

ANODE VOLTAGE	2500 Vdc
CATHODE CURRENT	30 mAdc
INJECTION ANODE VOLTAGE	750 Vdc
INJECTION ANODE CURRENT	1 mA

TYPICAL OPERATION

Frequency	515 - 605 Mc
Anode Voltage	1480 - 1790 Vdc
Cathode Current	13 - 17 mAdc
Injection Anode Voltage	500 Vdc
Injection Anode Current	0.02 mAdc
Tuning Rate	0.35 Mc/V
Minimum Power Output	10 W

X1089 and X1084

The X1089 and X1084 are nearly identical to the EM747 in construction and operation. They tune from 190 to 300 and from 300 to 600 Mc respectively with minimum power outputs of 20 and 30 mW. Ceramic-metal construction enables these tubes to survive extreme environments. Conduction cooling eliminates the need for cooling hardware. Temperature compensation for minimum frequency drift can be provided on special order.

	X1089	X1084
ELECTRONIC TUNING RANGE	190 - 300	300 - 600 Mc
MINIMUM OUTPUT	20	30 mW
COOLING	Conduction	

CHARACTERISTICS

Cathode: Unipotential, matrix	
Heater:	
Voltage (ac or dc)	6.3 volts
Current	0.8 ampere
RF Output: Type N Female	
Net Weight (including magnet and rf circuitry)	3.5 lbs. max.
Maximum Height	3 inches
Maximum Width (excluding rf connector)	2.3125 inches
Maximum Length	4.5 inches

MAXIMUM RATINGS

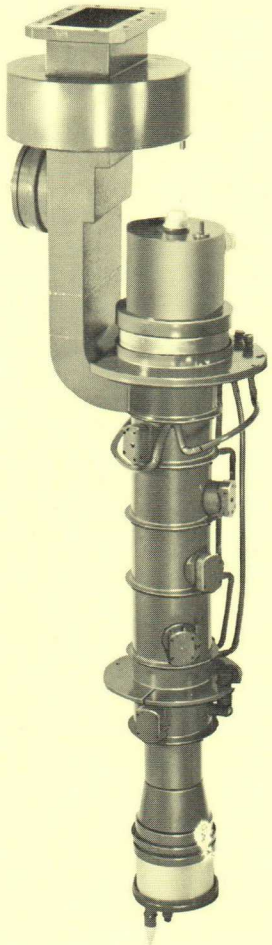
	X1089	X1084
ANODE VOLTAGE	2000	2000 Vdc
CATHODE CURRENT	5	10 mAdc
INJECTION ANODE VOLTAGE	500	500 Vdc
INJECTION ANODE CURRENT	0.5	0.5 mAdc

TYPICAL OPERATION

	X1089	X1084
Frequency	190 - 300	300 - 600 Mc
Anode Voltage	660 - 990	990 - 1900 Vdc
Cathode Current	.5 - 1.0	.5 - 1.5 mAdc
Injection Anode Voltage	200	150 Vdc
Injection Anode Current	.01	.05 mAdc
Tuning Rate	0.3	0.4 Mc/V
Minimum Power Output	20	30 mW

NEW PRODUCT

HIGH POWER MICROWAVE TUBE DIVISION



The X832 pulse amplifier klystron, shown here, is an example of Eimac's leadership in the pulse field. Due to the use of a high perveance hollow beam this tube produces 12% bandwidth and a peak output power of 10 Mw with peak beam voltage of only 114 kilovolts.

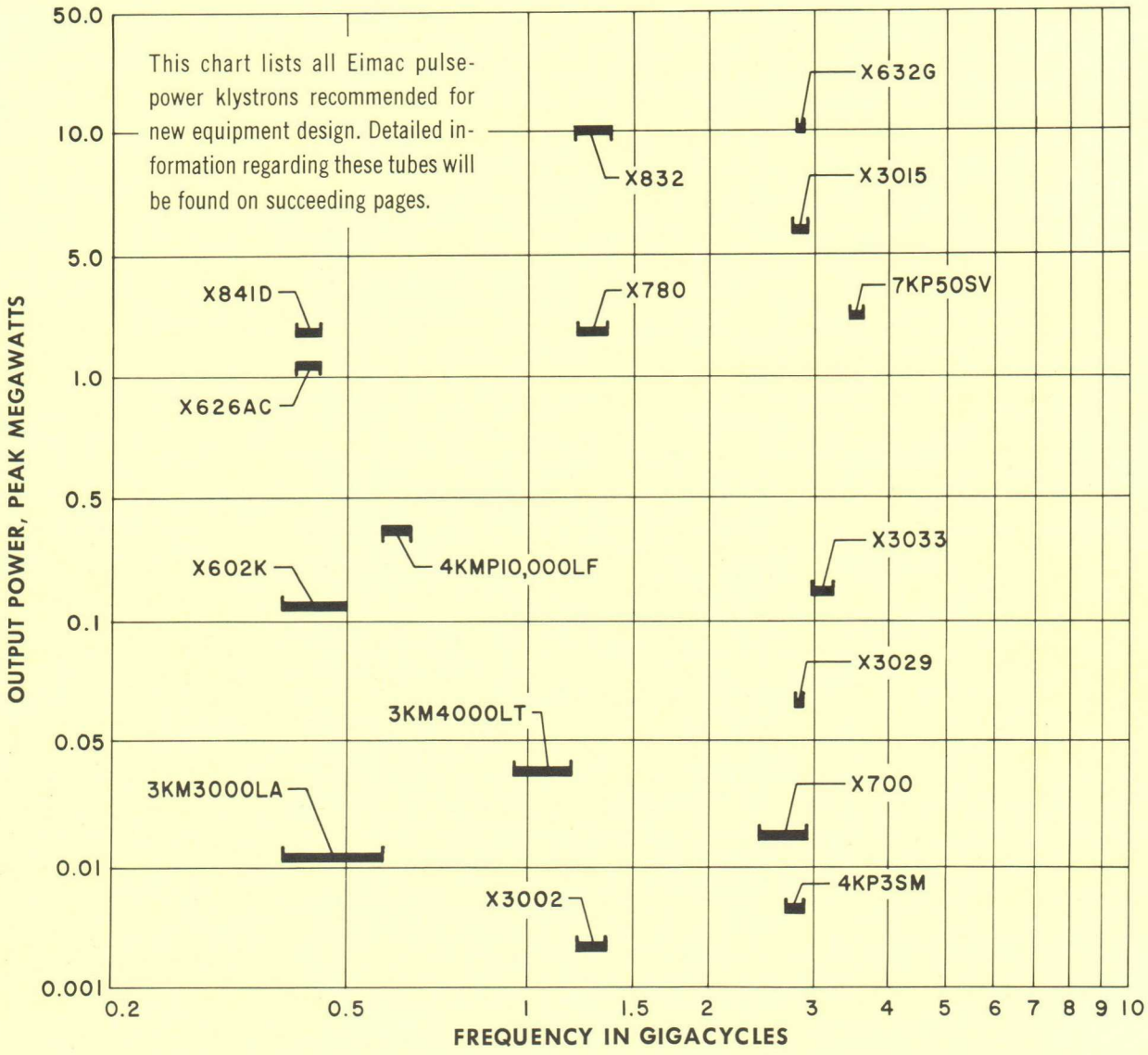
The High Power Microwave Tube Division of Eitel-McCullough, Inc. is responsible for developing and manufacturing velocity-modulated microwave tubes at average power levels above 100 watts. The principle products of the division are CW and pulse amplifier klystrons.

Eimac power amplifier klystrons are used in nearly all tropospheric scatter communication systems throughout the free world. They are also used in such applications as UHF television, missile and satellite tracking systems, space communications, radar detection systems for missiles and aircraft, particle accelerators, and radar astronomy.

Pulse amplifier klystrons were given priority in the High Power Microwave Tube Laboratory during the past year. Five new pulse klystrons (X832, X3029, X3033, 7KP50SV and 4KP3SM) were developed. The principal characteristics of these tubes, and of other Eimac pulse klystrons, will be found in this catalog. Such information, however, should be regarded only as an indication of Eimac's capability in the pulse field. The High Power Microwave Division welcomes opportunities to quote on special pulse amplifier klystrons at frequencies from 225 Mc to 10,000 Mc and at very high peak power levels. Eimac's perfection of the high perveance, hollow beam electron gun makes possible greater bandwidths than those previously achieved and also permits high peak power levels at relatively low beam voltages.

Relocation of the High Power Microwave Division at San Carlos, California was completed by mid-1962. Due to increased production efficiency, resulting from its improved facilities, this division can now produce more tubes in a shorter time with higher quality.

PULSE POWER KLYSTRONS



POWER KLYSTRON CATALOG NUMBERING SYSTEM

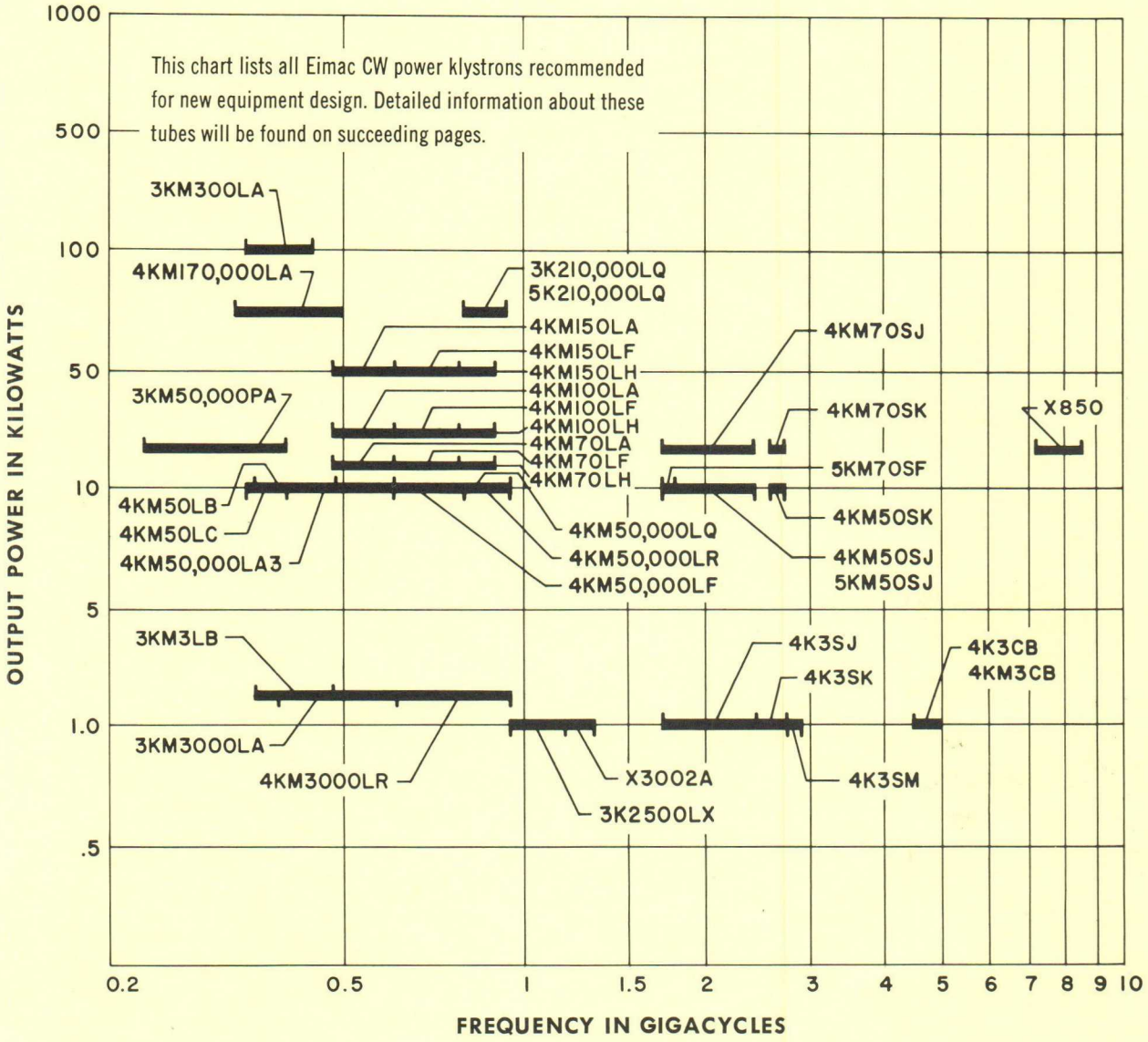
The catalog numbers for Eimac Power Klystrons have been designed to convey maximum information regarding the klystron. Here is an example:

4KMP10,000LF

- The first number indicates number of cavities (4). The first letter is always K, indicating klystron.
- The second letter, M, indicates that the tube has a modulating anode. If no modulating anode is used, the M is omitted.
- The third letter, P, indicates that this is a pulse klystron. In the case of CW klystrons the P is omitted.
- The second number, 10,000, indicates the maximum collector dissipation of the klystron. In catalog numbers assigned prior to May 1, 1961, this was expressed in watts, but in those assigned after this date it is expressed in kilowatts in the interest of brevity.
- The next to last letter, L, indicates the general frequency band in which the klystron operates.
- The last letter, F, indicates the frequency sub-band in which the klystron operates. Since no standard system of sub-band assignments exists, Eimac uses its own.

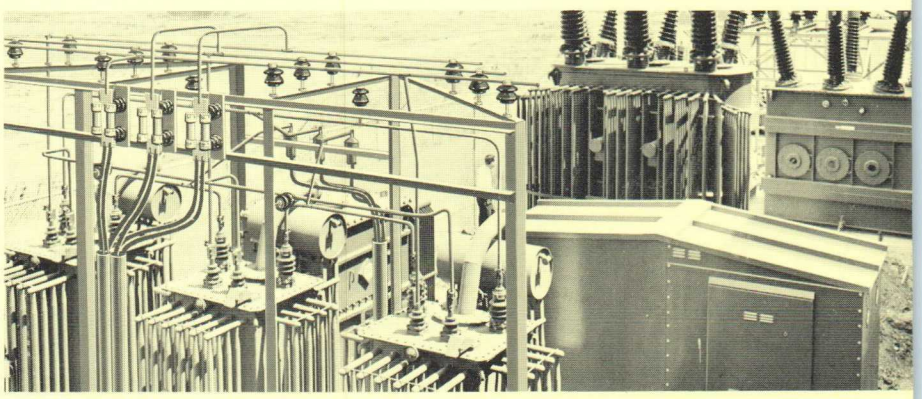
Eimac klystrons described by the letter X followed by three or four numerals are usually newly developed tubes which have not yet been assigned catalog numbers. In a few cases klystrons became so well known by their developmental designations that these are used permanently.

CW POWER KLYSTRONS

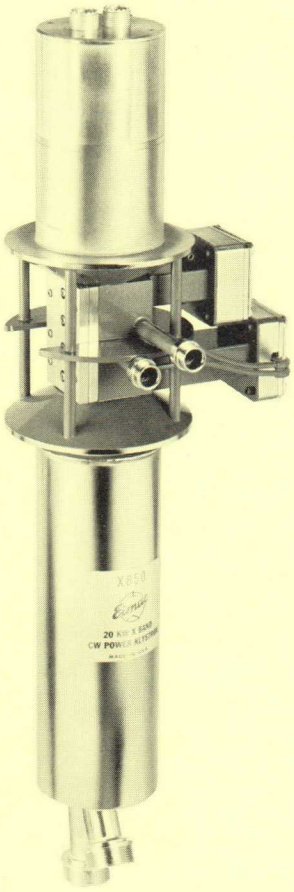


HIGH VOLTAGE POWER SUPPLY

Eimac's 3 Megawatt dc power supply. This extensive installation illustrates Eimac's unusual capability to develop tubes for current and future super-power applications.



X BAND CW



X850

7.125 - 8.5 Gc

20 kW

The X850 is the first of a series of Eimac X-Band power klystrons which will ultimately include tubes at all commonly used power levels.

Four integral cavities are used in the X850. Each tube is pretuned at the laboratory to the frequency chosen by the user, within the 7.125 to 8.5 Gc band.

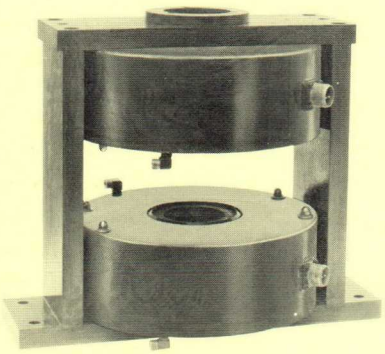
The X850 is intended especially for use in space age applications including missile and satellite tracking systems, radar astronomy, and earth-to-space vehicle communications.

The electron gun of the X850 utilizes a confined flow field which results in non-critical focusing and produces a stable, quiet beam. This electron gun is rugged in structure and completely enclosed in a metal shield to reduce high-voltage hazard to a minimum.

Fixed input and output coupling is used in the X850. The output window is a thick beryllium oxide disc. Unusual stability, for this power and frequency, is achieved through the use of improved body cooling.

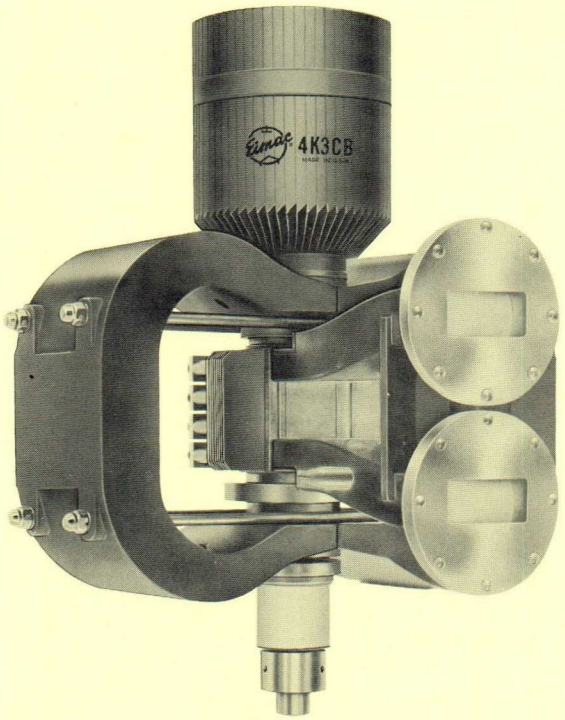
TYPICAL CHARACTERISTICS

Frequency	7.125 - 8.5 Gc
Output Power	20 kW
Gain	40 db
3 db Bandwidth	30 Mc
Beam Voltage	21 kVdc
Beam Current	3 Adc
Heater Voltage	15 Vac
Heater Current	5 Aac
RF Input Coupling	WR-112 Waveguide
RF Output Coupling	WR-112 Waveguide
Cooling	Water and Forced Air
Dimensions	6 in. x 7 in. x 25 in.
Weight	20 lbs.



ELECTROMAGNET AND KLYSTRON SUPPORT

Catalog Number	H-160
Length	17 in.
Width	18 in.
Depth	12 in.
Weight	200 lbs



4K3CB-4KM3CB

4.4 - 5.0 Gc
1.0 kW

The Eimac 4K3CB and 4KM3CB are air-cooled, permanent magnet focused, power-amplifier klystrons. They are alike in all respects except that the 4KM3CB has the Eimac Modulating Anode.

These klystrons have been designed to be rugged and stable in operation, to make them especially suitable for use in transportable equipment. The use of permanent magnet focusing and fixed input and output coupling eliminates all adjustments except tuning of the four cavities. This simplicity adds to their desirability for use under difficult environmental conditions.

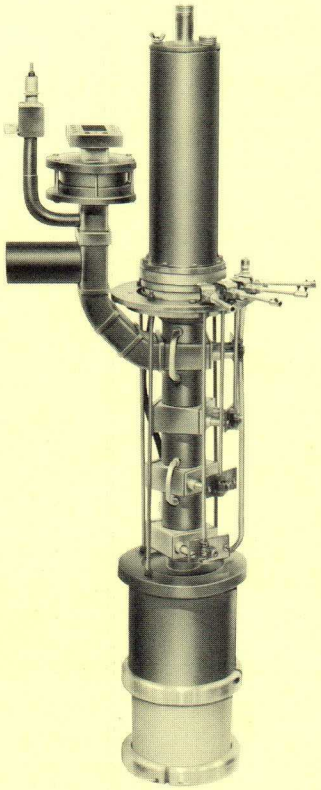
TYPICAL OPERATION

Frequency	4.4	5	Gc
Output Power	1.4	1.3	kW
Driving Power	40	40	mW
Gain	46	45	db
Beam Voltage	7.5	7.5	kVdc
Beam Current	0.47	0.47	Adc
Modulating Anode Voltage (4KM3CB only)	7.5	7.5	kVdc
Efficiency	40	37	%
3 db Bandwidth	7.5	9	Mc

CHARACTERISTICS

Cathode: Impregnated, Unipotential	
Heater Voltage	6.5 Vac
Heater Current	7.5 Aac
Length	15 in.
Width (At Waveguide)	13 in.
Depth (Across Magnet)	12 in.
Weight, Tube and Magnet	60 lbs.
RF Input Coupling	UG149A/U Waveguide
RF Output Coupling	UG149A/U Waveguide
Tuner Cooling	60 cfm @ 0.25 inches H_2O
Body Cooling	60 cfm (free)
Collector Cooling	200 cfm @ 2 inches H_2O
Maximum Temperature	150 °C
Maximum Load VSWR	2:1

S BAND PULSE



X632G

2.856 Gc

10 Mw Peak - 10 kW Average

The Eimac X632G is a pulse-amplifier klystron designed for linear accelerator service at a fixed frequency of 2856 megacycles.

Four integral cavities are used in the X632G. The output-coupling circuit is an inductive iris coupled into a waveguide through a ceramic disc window.

Use of a confined flow electron gun results in a very stable beam with non-critical focusing adjustments.

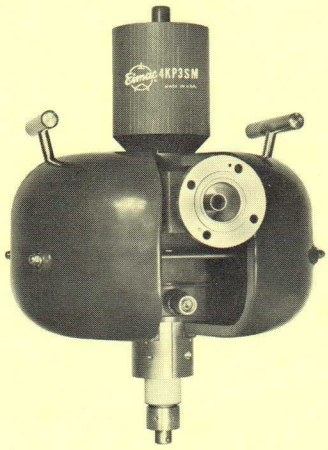
This klystron has a built-in ion pump and gauge which maintains low gas pressure and provides for continuous monitoring of this pressure.

TYPICAL CHARACTERISTICS

Frequency	2.856 Gc
Output Power, Peak	10 Mw
Output Power, Average	10 kW
Gain	40 db
Beam Voltage, Peak	187 kv
Beam Current, Peak	153 a
Pulse Width	1.4 us
Duty	0.001
Heater Voltage	28 Vac
Heater Current	11 Aac
RF Input Coupling	UG-22B/U Coaxial
RF Output Coupling	RF-48/U Waveguide
Cooling	Oil and Water
Dimensions	8 in. dia. x 48 in. long
Weight	100 lbs.

ELECTROMAGNET AND KLYSTRON SUPPORT

Catalog Number	H-149
Dimensions (Including Klystron):	
Length	54 in.
Diameter	18 in.
Weight	500 lbs.



4KP3SM

2.65 - 2.9 Gc

7.5 kw Peak

PERMANENT MAGNET FOCUSED PULSE AMPLIFIER KLYSTRON

TYPICAL CHARACTERISTICS

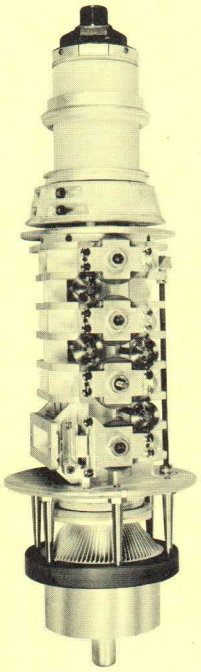
Frequency	2.65 - 2.9 Gc
Output Power, Peak	7.5 kw
Gain	50 db
Beam Voltage, Peak	14 kv
Beam Current, Peak	1.6 a
Heater Voltage	6 Vac
Heater Current	4.5 Aac
RF Input Coupling	UG-21 D/U Connector
RF Output Coupling	1⅝ in., 50 ohm
Dimensions	13 in. dia. x 19 in. long
Weight	85 lbs.

X700

2.4 - 2.9 Gc

20 kw Peak - 1 kW Average

PULSE AMPLIFIER KLYSTRON FOR USE IN MILITARY VEHICLES



TYPICAL CHARACTERISTICS

Frequency	2.4 - 2.9 Gc
Output Power, Peak	20 kw
Output Power, Average	1 kW
Gain	40 db
Beam Voltage	21 kVdc
Beam Current, Peak	2.77 a
Modulating Anode Voltage, Peak	10.5 kv
Duty	0.05
Pulse Width	50 us
Heater Voltage	7.5 Vac
Heater Current	5.5 Aac
RF Input Coupling	50 ohm Type TNC
RF Output Coupling	WR-284 Waveguide
Dimensions	7 in. dia. x 24 in. long
Weight	39 lbs.
Cooling	Forced Air

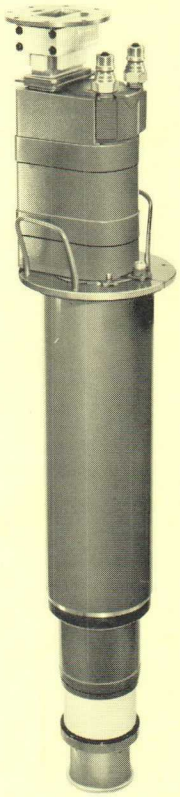
AMPLIFIER CIRCUIT ASSEMBLY

Dimensions (Including Klystron):	
Length	24 in.
Diameter	17 in.
Weight	160 lbs.

NEW PRODUCT

S BAND PULSE

7KP50SV



3.43 - 3.57 Gc

3 Mw Peak - 11 kW Average

The 7KP50SV is a fixed tuned, broadband pulse klystron designed for modern frequency-agile radar applications.

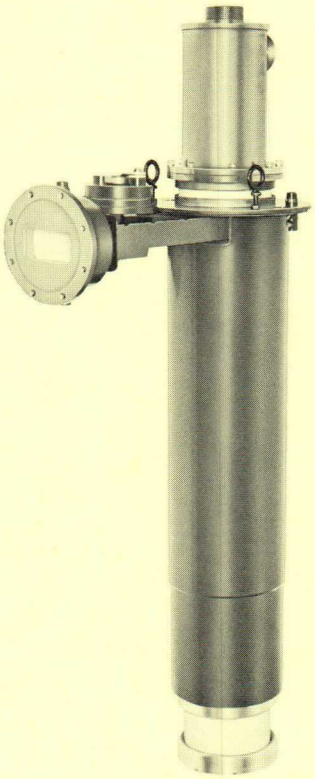
Seven integral cavities are used in the 7KP50SV. RF input and output couplings are fixed.

The electron gun of the 7KP50SV has a convergent confined flow configuration which minimizes focusing adjustments and produces a stable beam.

TYPICAL CHARACTERISTICS

Center Frequency	3.5 Gc
1 db Bandwidth	140 Mc
Output Power, Peak	3 Mw
Output Power, Average	11 kW
Gain	40 db
Beam Voltage, Peak	115 kv
Beam Current, Peak	78 a
Pulse Width	12 us
Duty	0.0036
Heater Voltage	7 Vac
Heater Current	25 Aac
RF Input Coupling	UG-22/U Connector
RF Output Coupling	UG-53/U Waveguide Flange
Cooling	Oil and Water
Dimensions, Klystron and Electromagnet:	
Length	43 in.
Diameter	16 in.
Electromagnet Catalog Number	H-167

X3015



2.7 - 2.9 Gc

6 Mw Peak - 10 kW Average

The Eimac X3015 is a fixed tuned, broadband pulse amplifier klystron designed for use in modern frequency-agile radar systems.

Seven integral cavities are used in the X3015. RF input and output couplings are fixed.

The electron gun of this tube has a convergent flow configuration which minimizes focusing adjustments and produces a stable beam.

TYPICAL CHARACTERISTICS

Center Frequency	2.8 Gc
1 db Bandwidth	200 Mc
Output Power, Peak	6 Mw
Output Power, Average	10 kW
Gain	40 db
Beam Voltage, Peak	140 kv
Beam Current, Peak	122 a
Pulse Width	6 us
Duty	0.0016
Heater Voltage	7 Vac
Heater Current	30 Aac
RF Input Coupling	UG-22/U Connector
RF Output Coupling	UG-53/U Waveguide Flange
Cooling	Oil and Water
Dimensions, Klystron and Electromagnet:	
Length	40 in.
Diameter	16½ in.
Electromagnet Catalog Number	H-164

X3029

2.856 Gc

65 kw Peak - 130 W Average

PPM FOCUSED PULSE AMPLIFIER KLYSTRON FOR RADAR OR LINEAR ACCELERATOR SERVICE

TYPICAL CHARACTERISTICS

Frequency	2.856 Gc
Output Power, Peak	65 kw
Output Power, Average	130 W
Power Gain	60 db
Beam Voltage, Peak	26 kv
Beam Current, Peak	9 a
Dimensions	6 in. dia. x 24 in. long
Cavities	Six Integral

X3033

2.95 - 3.25 Gc

200 kw Peak - 48 kW Average

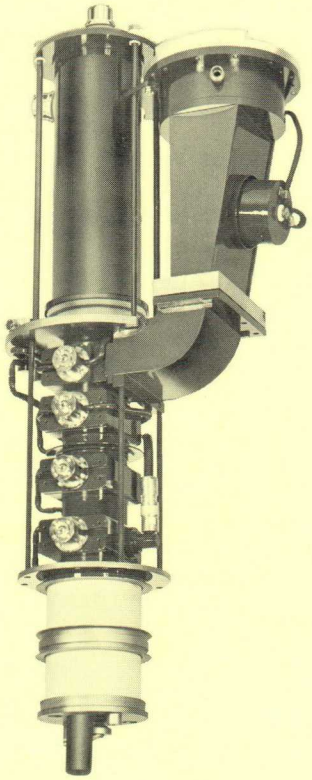
LONG PULSE, HIGH AVERAGE POWER, PULSE AMPLIFIER KLYSTRON FOR RADAR SERVICE

TYPICAL CHARACTERISTICS

Frequency	2.95 - 3.25 Gc
Output Power, Peak	200 kw
Output Power, Average	48 kW
Power Gain	50 db
Beam Voltage	40 kVdc
Beam Current, Peak	16 a
Modulating Anode Voltage, Peak	40 kv
Pulse Width	2.4 ms
Dimensions	9½ in. dia. x 44 in. long
Cavities	Seven, Integral
Electromagnet Catalog Number	H-169

NEW PRODUCT

S BAND CW



4KM70SJ

1.7 - 2.4 Gc

20 kW

4KM50SJ

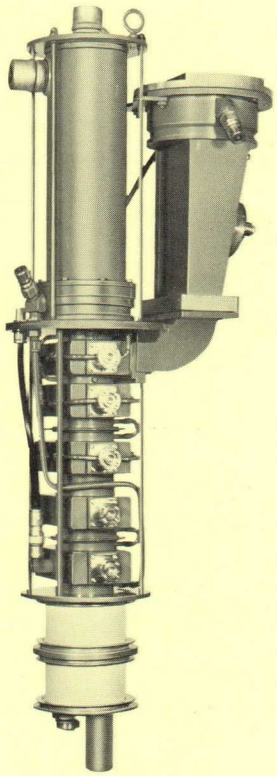
1.7 - 2.4 Gc

10 kW

The 4KM70SJ was the first product of Eimac's High Power Microwave Tube Laboratory, established in 1961. The design of this klystron is completely new, incorporating many recent advances in klystron technology. The 4KM50SJ uses the same design but its nominal output is 10 kW. Each klystron features a confined flow electron gun, non-critical focusing electromagnet, long-life EMA cathode, fixed input and output couplings, built-in titanium vacuum pump and the Eimac Modulating Anode.

TYPICAL CHARACTERISTICS

	4KM70SJ	4KM50SJ	
Frequency	1.7 - 2.4	1.7 - 2.4	Gc
Output Power	20	11	kW
Driving Power	1	1	W
Beam Voltage	21	18	kVdc
Beam Current	2.45	1.8	Adc
Modulating Anode Voltage	13	10.5	kVde
Heater Voltage	7	7	Vac
Heater Current	12	12	Aac
RF Input Coupling	Type N Coaxial		
RF Output Coupling	UG435A/U Flange		
Cooling	Water and Forced Air		
Dimensions Including Electromagnet	18 in. dia. x 35 in. long		
Weight, Klystron Only	90	90	lbs.
3 db Bandwidth	12	12	Mc
Electromagnet Catalog Number	H-136	H-158	



5KM70SF

1.7 - 1.8 Gc

10 - 20 kW

5KM50SJ

1.7 - 2.4 Gc

10 kW

These power amplifier klystrons are designed for specific applications in space communications. The 5KM70SF provides the extreme bandwidth required for satellite communications systems; the 5KM50SJ is most useful for satellite tracking systems.

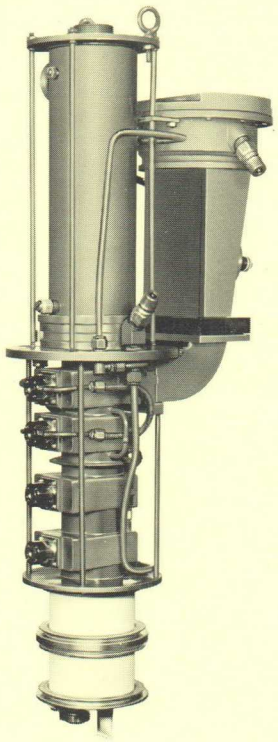
Each klystron features a confined flow electron gun, non-critical focusing electromagnet, long life EMA cathode, fixed input and output RF couplings, built-in titanium vacuum pump and the Eimac Modulating Anode.

TYPICAL CHARACTERISTICS

	5KM70SF		5KM50SJ	
Output Power	10	20	10	kW
Driving Power	5	1	0.05	W
Beam Voltage	17	17.5	18	kVdc
Beam Current	3.25	3.75	1.75	Adc
Modulating Anode Voltage	17	17.5	10.3	kVdc
Bandwidth	14 (1 db)	10 (1 db)	10 (3 db)	Mc
Heater Voltage	7.5	7.5	7.5	Vac
Heater Current	12	12	12	Aac
RF Input Coupling	Type N Coaxial Fitting			
RF Output Coupling	UG435A/U Flange			
Dimensions Including Electromagnet	19 in. dia. x 38 in. long			
Electromagnet Catalog Number	H-159	H-159	H-166	

NEW PRODUCT

S BAND CW



4KM70SK

2.55 - 2.7 Gc

20 kW

4KM50SK

2.55 - 2.7 Gc

10 kW

These Eimac klystrons differ only in output power. Their design is completely new, incorporating many recent advances in klystron technology. Each tube features a confined flow electron gun, non-critical focusing electromagnet, long-life EMA cathode, fixed input and output couplings, built-in titanium vacuum pump and the Eimac Modulating Anode.

TYPICAL CHARACTERISTICS

	4KM70SK	4KM50SK	
Frequency	2.55 - 2.7	2.55 - 2.7	Gc
Output Power	20	11	kW
Driving Power	1	1	W
Beam Voltage	21	18	kVdc
Beam Current	2.45	1.8	Adc
Modulating Anode Voltage	13	10.5	kVdc
Heater Voltage	7	7	Vac
Heater Current	12	12	Aac
RF Input Coupling	Type N Coaxial		
RF Output Coupling	UG435A/U Flange		
Cooling	Water and Forced Air		
Dimensions Including Electromagnet	18 in. dia. x 35 in. long		
Weight, Klystron Only	90	90	lbs.
3 db Bandwidth	14	14	Mc
Electromagnet Catalog Number	H-162	H-161	

4K3SJ

1.7 - 2.4 Gc

1 kW

4K3SK

2.4 - 2.7 Gc

1 kW

4K3SM

2.65 - 2.86 Gc

1 kW

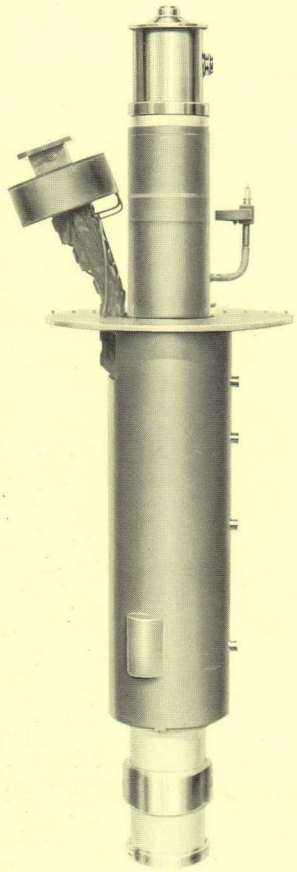
The Eimac 4K3SJ, 4K3SK and 4K3SM are air-cooled, permanent magnet focused, power amplifier klystrons designed especially for use in transportable equipment. These klystrons essentially differ only in frequency range. Their light weight and rugged construction recommend them for many applications formerly restricted to low power. The use of permanent magnet focusing and fixed input and output couplings eliminates all adjustments except tuning of the four cavities.

TYPICAL CHARACTERISTICS

	4K3SJ	4K3SK	4K3SM	
Frequency	1.7 - 2.4	2.4 - 2.7	2.65 - 2.86	Gc
Output Power	1	1	1	kW
Gain	45	47	45	db
3 db Bandwidth	4 - 6	7	7	Mc
Beam Voltage	6	7	6.5	kVdc
Beam Current	0.54	0.48	0.46	Adc
Heater Voltage	6	6	6	Vac
Heater Current	4.5	4.5	4.5	Aac
RF Input Coupling	UG-21 D/U Connector			
RF Output Coupling	1⅝ in., 50 ohm			
Cooling	Forced Air			
Dimensions	13 in. dia. x 18 in. long			
Weight	85	85	85	lbs.

NEW PRODUCT

L BAND PULSE



X780

1.235 - 1.365 Gc
2.5 Mw Peak - 75 kW Average

The Eimac X780 is a four-cavity pulse-amplifier klystron designed for long range, high-average-power radar. Use of the Eimac Modulating Anode in this klystron enables it to be pulsed with minimum modulating power.

Fixed input coupling with low VSWR is a feature of this tube. The output-coupling circuit is an inductive iris coupled into the waveguide through a ceramic disc window.

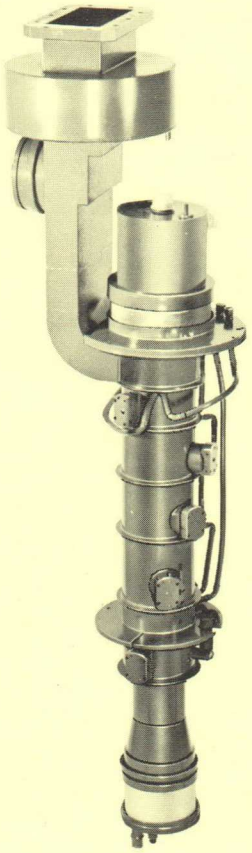
The X780 incorporates a built-in ion pump and gauge for maintaining low gas pressure and for monitoring this pressure.

TYPICAL CHARACTERISTICS

Frequency	1.235 - 1.365 Gc
Output Power, Peak	2.5 Mw
Output Power, Average	75 kW
Gain (Tuned for Maximum Efficiency)	35 db
Beam Voltage	115 kVdc
Beam Current, Peak	58.6 a
Modulating Anode Voltage, Peak	78 kv
Pulse Width (Maximum)	2000 us
Duty	0.03
Heater Voltage	7 Vac
Heater Current	90 Aac
RF Input Coupling	⅞ in., 50 ohm Coaxial
RF Output Coupling	WR-650 Waveguide
Cooling	Liquid
Dimensions	15 in. dia. x 71 in. long
Weight	440 lbs.
Cavities	Four Integral

ELECTROMAGNET AND KLYSTRON SUPPORT

Catalog Number	H-145
Dimensions (Including Klystron):	
Length	74 in.
Diameter	24 in.
Weight	1500 lbs.



X832

1.2175 - 1.2825 Gc
10 Mw Peak - 10 kW Average

The Eimac X832 is a very wide band pulse-amplifier klystron designed to operate at a fixed frequency of 1.3 Gc with 1 db bandwidth of 165 Mc. This extraordinary bandwidth results from the use of a microperveance 7 hollow beam.

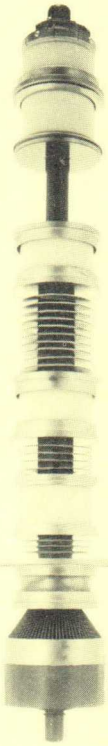
Five integral driver cavities, together with a triple tuned filter output circuit are used in the X832.

TYPICAL CHARACTERISTICS

Center Frequency	1.3 Gc
1 db Bandwidth	165 Mc
Output Power, Peak	10 Mw
Output Power, Average	10 kW
Gain	35 db
Beam Voltage, Peak	114 kv
Beam Current, Peak	272 a
Heater Voltage	9 Vac
Heater Current	14 Aac
RF Input Coupling	UG-22/U Connector
RF Output Coupling	UG-417A Waveguide Flange
Cooling	Oil and Water
Dimensions, Klystron and Electromagnet:	
Length	55 in.
Diameter	30 in.
Electromagnet Catalog Number	H-168

NEW PRODUCT

L BAND PULSE



X3002

1.235 - 1.365 Gc

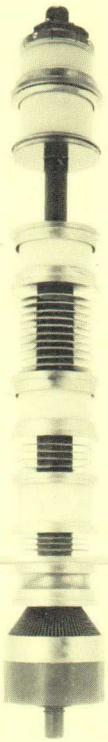
4 kw Peak - 120 W Average

TYPICAL CHARACTERISTICS

Frequency	1.235 - 1.365 Gc
Output Power, Peak	4 kw
Output Power, Average	120 W
Gain	27 db
Beam Voltage	10.3 kVdc
Beam Current, Peak	0.75 a
Modulating Anode Voltage, Peak	3.9 kv
Heater Voltage	7 Vac
Heater Current	5.5 Aac
RF Input Coupling	50 ohm, Type N
RF Output Coupling	⅞ in., 50 ohm
Cooling	Forced Air
Dimensions	5 in. dia. x 27 in. long
Weight	23 lbs.
Cavities	Three External

AMPLIFIER CIRCUIT ASSEMBLY

Catalog Number	H-147
Dimensions (Including Klystron):	
Length	29 in.
Diameter	18 in.
Weight	155 lbs.



3KM4000LT

960 - 1215 Mc

40 kw Peak - 1 kW Average

TYPICAL CHARACTERISTICS

Frequency	960 - 1215 Mc
Output Power, Peak	40 kw
Output Power, Average	1 kW
Gain	33 db
Beam Voltage	28 kVdc
Beam Current, Peak	4.2 a
Modulating Anode Voltage, Peak	13 kv
Heater Voltage	7.5 Vac
Heater Current	5.5 Aac
RF Input Coupling	50 ohm, Type N
RF Output Coupling	1⅝ in., 50 ohm
Cooling	Forced Air
Dimensions	5 in. dia. x 30 in. long
Weight	21 lbs.
Cavities	Three External

AMPLIFIER CIRCUIT ASSEMBLY

Catalog Number	H-116
Dimensions (Including Klystron):	
Length	30 in.
Diameter	19 in.
Weight	240 lbs.

L BAND CW

3K2500LX

980 - 1200 Mc

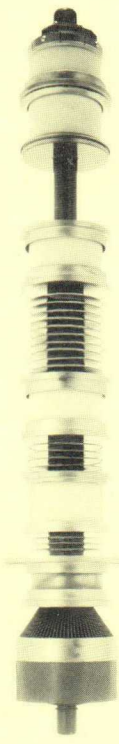
1 kW

TYPICAL CHARACTERISTICS

Frequency	980 - 1200 Mc
Output Power	1 kW
Drive Power	2 W
Beam Voltage	7 kVdc
Beam Current	0.455 Adc
Heater Voltage	7.5 Vac
Heater Current	5.8 Aac
RF Input Coupling	50 ohm, Type N
RF Output Coupling	1⅝ in., 50 ohm
Cooling	Forced Air
Dimensions	5 in. dia. x 26 in. long
Weight	22 lbs.
Cavities	Three External

AMPLIFIER CIRCUIT ASSEMBLY

Catalog Number	H-114
Dimensions (Including Klystron):	
Length	27 in.
Diameter	22 in.
Weight	175 lbs.



X3002A

1.235 - 1.365 Gc

1 kW

TYPICAL CHARACTERISTICS

Frequency	1.235 - 1.365 Gc
Output Power	1 kW
Drive Power	5 W
Beam Voltage	7 kVdc
Beam Current	0.44 Adc
Modulating Anode Voltage	2.75 kVdc
Heater Voltage	7 Vac
Heater Current	5.5 Aac
RF Input Coupling	50 ohm, Type N
RF Output Coupling	⅞ in., 50 ohm
Cooling	Forced Air
Dimensions	5 in. dia. x 27 in. long
Weight	23 lbs.
Cavities	Three External

AMPLIFIER CIRCUIT ASSEMBLY

Catalog Number	H-147
Dimensions (Including Klystron):	
Length	29 in.
Diameter	18 in.
Weight	155 lbs.

UHF PULSE

X626AC

400 - 450 Mc

1.25 Mw Peak - 75 kW Average

TYPICAL CHARACTERISTICS

Frequency	400 - 450 Mc
Output Power, Peak	1.25 Mw
Output Power, Average	75 kW
Gain	30 db
Beam Voltage	100 kVdc
Beam Current, Peak	32.5 a
Modulating Anode Voltage, Peak	52 kv
Pulse Width	2000 us
Pulse Repetition Rate	30 pps
Duty	0.06
Heater Voltage	7.5 Vac
Heater Current	95 Aac
RF Input Coupling	1⅝ in., 50 ohm
RF Output Coupling	WR-2100 Waveguide
Cooling	Liquid and Forced Air
Dimensions	18 in. dia. x 118 in. long
Weight	590 lbs.
Cavities	Three External

AMPLIFIER CIRCUIT ASSEMBLY

Catalog Number	H-123B
Dimensions (Including Klystron):	
Length	120 in.
Width and Depth	38 in.
Weight	1780 lbs.

4KMP10,000LF

570 - 630 Mc

400 kw Peak - 4 kW Average

TYPICAL CHARACTERISTICS

Frequency	570 - 630 Mc
Output Power, Peak	466 kw
Output Power, Average	4.66 kW
Gain	57 db
Beam Voltage	65 kVdc
Beam Current, Peak	16.5 a
Modulating Anode Voltage, Peak	32 kv
Pulse Width	60 us
Duty	0.01
Heater Voltage	11 Vac
Heater Current	22 Aac
RF Input Coupling	50 ohm, Type N
RF Output Coupling	WR-1500 Waveguide
Cooling	Forced Air and Oil
Dimensions	7 in. dia. x 84 in. long
Weight	140 lbs.
Cavities	Four External

AMPLIFIER CIRCUIT ASSEMBLY

Catalog Number	H-127
Dimensions (Including Klystron):	
Length	85 in.
Width and Depth	24 in.

3KM3000LA

385 - 585 Mc

12 kw Peak - 720 W Average

TYPICAL CHARACTERISTICS

Frequency	385 - 585 Mc
Output Power, Peak	12 kw
Output Power, Average	720 W
Gain	30 db
Beam Voltage	15 kVdc
Beam Current, Peak	1.74 a
Modulating Anode Voltage, Peak	15 kv
Heater Voltage	5 Vac
Heater Current	31 Aac
RF Input Coupling	50 ohm, Type N
RF Output Coupling	1⅝ in., 50 ohm
Cooling	Forced Air
Dimensions	5 in. dia. x 44 in. long
Weight	46 lbs.
Cavities	Three External

AMPLIFIER CIRCUIT ASSEMBLY

Catalog Number	H-120
Dimensions (Including Klystron):	
Length	50 in.
Diameter	26 in.
Weight	538 lbs.

X602K

375 - 500 Mc

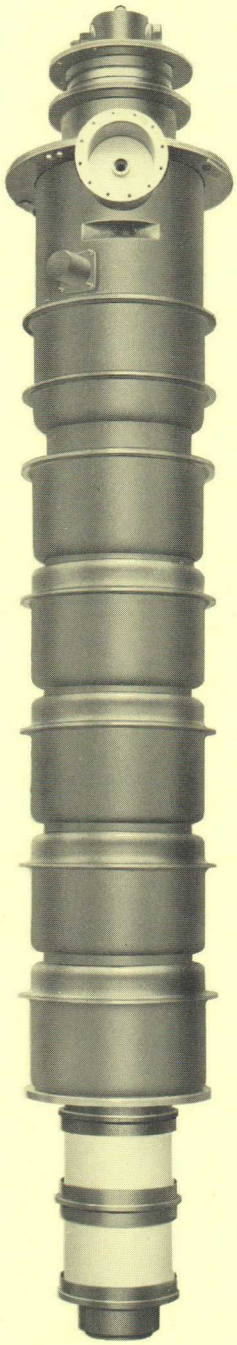
150 kw Peak - 75 kW Average

TYPICAL CHARACTERISTICS

Frequency	375 - 500 Mc
Output Power, Peak	155 kw
Output Power, Average	34 kW
Gain	47 db
Beam Voltage	45 kVdc
Beam Current, Peak	7.7 a
Modulating Anode Voltage, Peak	45 kv
Heater Voltage	11 Vac
Heater Current	47.5 Aac
RF Input Coupling	50 ohm, Type N
RF Output Coupling	6⅛ in., 50 ohm
Cooling	Liquid and Forced Air
Dimensions	9 in. dia. x 89 in. long
Weight	196 lbs.
Cavities	Four External

AMPLIFIER CIRCUIT ASSEMBLY

Catalog Number	H-142
Dimensions (Including Klystron):	
Length	103 in.
Diameter	38 in.
Weight	1792 lbs.



X841D

400 - 450 Mc
2.5 Mw Peak - 150 kW Average

The Eimac X841D is a pulse amplifier klystron designed for frequency-agile, high-average-power radar. It is fixed tuned with a minimum 1 db bandwidth of 5%. This tube can be supplied pretuned to any frequency within its specified frequency range.

Six integral cavities are used in the X841D. RF input and output couplings are fixed and optimized at maximum output power.

This klystron employs the Eimac Modulating Anode which provides a convenient means for pulse modulating the output power without changing the beam voltage.

The X841D incorporates a built-in ion pump and gauge which maintains low gas pressure and provides means for continuously monitoring pressure.

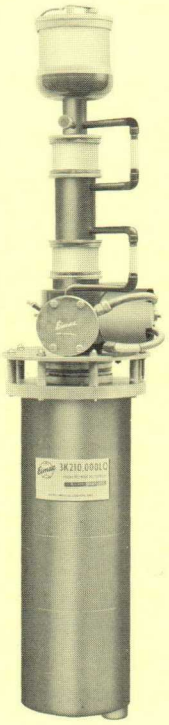
TYPICAL CHARACTERISTICS

Frequency	400 - 450 Mc
Output Power, Peak	2.5 Mw
Output Power, Average	150 kW
Gain	33 db
Beam Voltage	115 kVdc
Beam Current, Peak	66.6 a
Modulating Anode Voltage, Peak	80 kv
1 db Bandwidth, Minimum	5 %
Pulse Width	2000 us
Duty	0.06
Heater Voltage	30 Vac
Heater Current	28 Aac
RF Input Coupling	Type N Coaxial
RF Output Coupling	6⅛ in., 50 ohm
Cooling	Liquid
Dimensions	20½ in. dia. x 130 in. long
Weight	1000 lbs.

ELECTROMAGNET AND KLYSTRON SUPPORT

Catalog Number	H-150
Dimensions (Including Klystron):	
Length	130 in.
Diameter	26 in.

UHF-CW



3K210,000LQ

755 - 985 Mc

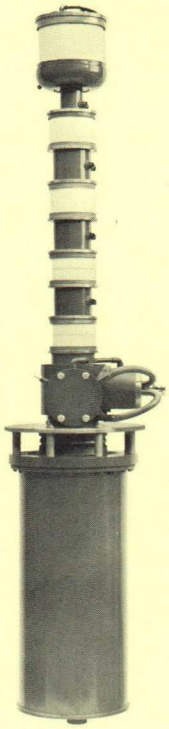
75 kW

TYPICAL CHARACTERISTICS

Frequency	755 - 985 Mc
Output Power	75 kW
Drive Power	3750 W
Bandwidth	7 Mc
Beam Voltage	27 kVdc
Beam Current	6.7 Adc
Heater Voltage	26 Vac
Heater Current	10.5 Aac
RF Input Coupling	3⅛ in., 50 ohm
RF Output Coupling	WR-975 Waveguide
Cooling	Liquid and Forced Air
Dimensions	13 in. dia. x 61 in. long
Weight	370 lbs.
Cavities	Two External, One Integral

AMPLIFIER CIRCUIT ASSEMBLY

Catalog Number	H-129
Dimensions (Including Klystron):	
Length	72 in.
Width	30 in.
Depth	42 in.
Weight	600 lbs.



5K210,000LQ

755 - 985 Mc

75 kW

TYPICAL CHARACTERISTICS

Frequency	755 - 985 Mc
Output Power	75 kW
Drive Power	3 W
Bandwidth	10 Mc
Beam Voltage	25 kVdc
Beam Current	8 Adc
Heater Voltage	15 Vac
Heater Current	18 Aac
RF Input Coupling	50 ohm, Type N
RF Output Coupling	WR-975 Waveguide
Cooling	Liquid and Forced Air
Dimensions	44 in. dia. x 66 in. long
Weight	380 lbs.
Cavities	Four External, One Integral

AMPLIFIER CIRCUIT ASSEMBLY

Catalog Number	H-132
Dimensions (Including Klystron):	
Length	75 in.
Width	32 in.
Depth	47 in.
Weight	1530 lbs.

4KM170,000LA

325 - 500 Mc

75 kW

TYPICAL CHARACTERISTICS

Frequency	325 - 500 Mc
Output Power	75 kW
Drive Power	0.5 W
Beam Voltage	35 kVdc
Beam Current	5.2 Adc
Heater Voltage	11 Vac
Heater Current	23 Aac
RF Input Coupling	50 ohm, Type N
RF Output Coupling	6⅛ in., 50 ohm
Cooling	Liquid and Forced Air
Dimensions	9 in. dia. x 89 in. long
Weight	196 lbs.
Cavities	Four External

AMPLIFIER CIRCUIT ASSEMBLY

Catalog Number	H-142
Dimensions (Including Klystron):	
Length	103 in.
Diameter	38 in.
Weight	1792 lbs.

3KM50,000PA

225 - 400 Mc

20 kW

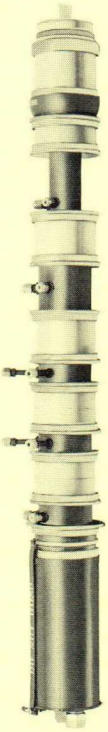
TYPICAL CHARACTERISTICS

Frequency	225 - 400 Mc
Output Power	23.1 kW
Drive Power	5 W
Beam Voltage	23 kVdc
Beam Current	2.6 Adc
Heater Voltage	7.5 Vac
Heater Current	40 Aac
RF Input Coupling	50 ohm, Type N
RF Output Coupling	6⅛ in., 50 ohm
Cooling	Liquid and Forced Air
Dimensions	8 in. dia. x 81 in. long
Weight	163 lbs.
Cavities	Three External

AMPLIFIER CIRCUIT ASSEMBLY

Catalog Number	H-126
Dimensions (Including Klystron):	
Length	88 in.
Diameter	51 in.
Weight	1940 lbs.

UHF-CW



4KM50,000LR

755 - 985 Mc

10 kW

TYPICAL CHARACTERISTICS

Frequency	755 - 985 Mc
Output Power	10.8 kW
Drive Power	10 W
Bandwidth	7 Mc
Beam Voltage	17 kVdc
Beam Current	1.9 Adc
Heater Voltage	7.5 Vac
Heater Current	40 Aac
RF Input Coupling	50 ohm, Type N
RF Output Coupling	3⅛ in., 50 ohm
Cooling	Liquid and Forced Air
Dimensions	6 in. dia. x 46 in. long
Weight	55 lbs.
Cavities	Four External

AMPLIFIER CIRCUIT ASSEMBLY

Catalog Number	H-141
Dimensions (Including Klystron):	
Length	51 in.
Diameter	29 in.
Weight	349 lbs.

4KM50,000LQ

610 - 985 Mc

10 kW

TYPICAL CHARACTERISTICS

Frequency	610 - 985 Mc
Output Power	11.4 kW
Drive Power	10 W
Bandwidth	5 Mc
Beam Voltage	17 kVdc
Beam Current	1.8 Adc
Heater Voltage	7.5 Vac
Heater Current	40 Aac
RF Input Coupling	50 ohm, Type N
RF Output Coupling	3⅛ in., 50 ohm
Cooling	Liquid and Forced Air
Dimensions	6 in. dia. x 46 in. long
Weight	55 lbs.
Cavities	Four External

AMPLIFIER CIRCUIT ASSEMBLY

Catalog Number	H-122
Dimensions (Including Klystron):	
Length	51 in.
Diameter	29 in.
Weight	349 lbs.

4KM50,000LF

610 - 790 Mc

10 kW

TYPICAL CHARACTERISTICS

Frequency	610 - 790 Mc
Output Power	12.6 kW
Drive Power	10 W
Bandwidth	8 Mc
Beam Voltage	18 kVdc
Beam Current	2.03 Adc
Heater Voltage	7.5 Vac
Heater Current	40 Aac
RF Input Coupling	50 ohm, Type N
RF Output Coupling	3⅛ in., 50 ohm
Cooling	Liquid and Forced Air
Dimensions	7 in. dia. x 62 in. long
Weight	64 lbs.
Cavities	Four External

AMPLIFIER CIRCUIT ASSEMBLY

Catalog Number	H-139
Dimensions (Including Klystron):	
Length	68 in.
Diameter	26 in.
Weight	767 lbs.

4KM50,000LA3

400 - 610 Mc

10 kW

TYPICAL CHARACTERISTICS

Frequency	400 - 610 Mc
Output Power	12 kW
Drive Power	0.05 W
Beam Voltage	17 kVdc
Beam Current	1.8 Adc
Heater Voltage	7.5 Vac
Heater Current	40 Aac
RF Input Coupling	50 ohm, Type N
RF Output Coupling	3⅛ in., 50 ohm
Cooling	Liquid and Forced Air
Dimensions	5 in. dia. x 66 in. long
Weight	64 lbs.
Cavities	Four External

AMPLIFIER CIRCUIT ASSEMBLY

Catalog Number	H-143
Dimensions (Including Klystron):	
Length	68 in.
Diameter	26 in.
Weight	1084 lbs.

UHF-CW

4KM50LB

350 - 475 Mc
10 kW

4KM50LC

345 - 455 Mc
10 kW

TYPICAL CHARACTERISTICS

	4KM50LB	4KM50LC	
Frequency	350 - 475	345 - 455	Mc
Output Power	10	10	kW
Drive Power	6	6	W
Beam Voltage	17	17	kVdc
Beam Current	1.9	1.9	Adc
3 db Bandwidth	3	2	Mc
Heater Voltage	7.5	7.5	Vac
Heater Current	40	40	Aac
RF Input Coupling	50 ohm, Type N		
RF Output Coupling	3⅛ in., 50 ohm		
Cooling	Liquid and Forced Air		
Dimensions	5 in. dia. x 66 in. long		
Weight	64	64	lbs.
Cavities	Four External		

AMPLIFIER CIRCUIT ASSEMBLY

Catalog Number	H-153
Dimensions (Including Klystron):	
Length	68 in.
Diameter	26 in.
Weight	1084 lbs.

4KM3000LR

610 - 985 Mc
2 kW

TYPICAL CHARACTERISTICS

	Broad Band	Narrow Band	
Output Power	1	2.1	kW
Drive Power	10	0.05	W
Beam Voltage	8.1	8.5	kVdc
Beam Current	0.48	0.55	Adc
3 db Bandwidth	7	0.5	Mc
Heater Voltage	5	5	Vac
Heater Current	31	31	Aac
RF Input Coupling	50 ohm, Type N		
RF Output Coupling	1⅝ in., 50 ohm		
Cooling	Forced Air		
Dimensions	5 in. dia. x 37 in. long		
Weight	38		lbs.
Cavities	Four External		

AMPLIFIER CIRCUIT ASSEMBLY

Catalog Number	H-125
Dimensions (Including Klystron):	
Length	40 in.
Diameter	25 in.
Weight	225 lbs.

3KM3LB

350 - 475 Mc
2 kW

TYPICAL CHARACTERISTICS

Frequency	350 - 475 Mc
Output Power	2.3 kW
Drive Power	5 W
Beam Voltage	9 kVdc
Beam Current	0.59 Adc
Heater Voltage	5 Vac
Heater Current	31 Aac
RF Input Coupling	50 ohm, Type N
RF Output Coupling	1⅝ in., 50 ohm
Cooling	Forced Air
Dimensions	5 in. dia. x 44 in. long
Weight	46 lbs.
Cavities	Three External

AMPLIFIER CIRCUIT ASSEMBLY

Catalog Number	H-157
Dimensions (Including Klystron):	
Length	50 in.
Diameter	26 in.
Weight	570 lbs.

3KM3000LA

385 - 585 Mc
2 kW

TYPICAL CHARACTERISTICS

Frequency	385 - 585 Mc
Output Power	2.3 kW
Drive Power	2 W
Beam Voltage	9 kVdc
Beam Current	0.59 Adc
Heater Voltage	5 Vac
Heater Current	31 Aac
RF Input Coupling	50 ohm, Type N
RF Output Coupling	1⅝ in., 50 ohm
Cooling	Forced Air
Dimensions	5 in. dia. x 44 in. long
Weight	46 lbs.
Cavities	Three External

AMPLIFIER CIRCUIT ASSEMBLY

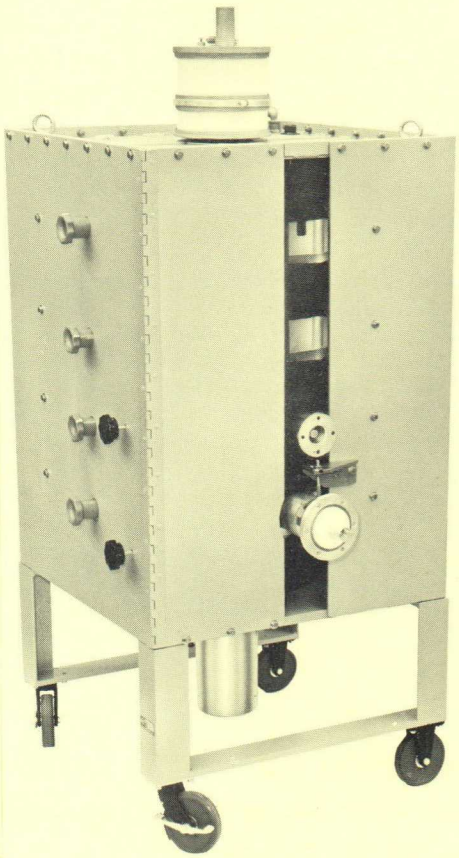
Catalog Number	H-120
Dimensions (Including Klystron):	
Length	50 in.
Diameter	26 in.
Weight	538 lbs.

NEW PRODUCT

UHF TV

4KM70LA 4KM100LA 4KM150LA
4KM70LF 4KM100LF 4KM150LF
4KM70LH 4KM100LH 4KM150LH

These Eimac Power Klystrons cover the UHF television spectrum at power levels from 12.5 kilowatts to 50 kilowatts.



FEATURES

Random AM noise more than 60 db below black level

Confined flow electron gun for non-critical focusing

Large cathode with loading less than 150 mA per square centimeter for long life

Excellent linearity

Built-in titanium getter

Modulating anode for protection against internal arcs

Four external cavities

Compact and attractive amplifier circuit assemblies

Ample bandwidth

High gain, requiring minimum number of preceding amplifiers

Cooling water need not be of high purity because it does not contact RF circuits

Suitable for replacement of older klystrons in existing transmitters

TYPICAL CHARACTERISTICS

	4KM70LA (470-610 Mc) 4KM70LF (590-720 Mc) 4KM70LH (720-890 Mc)	4KM100LA (470-610 Mc) 4KM100LF (590-720 Mc) 4KM100LH (720-890 Mc)	4KM150LA (470-610 Mc) 4KM150LF (590-720 Mc) 4KM150LH (720-890 Mc)	
Output Power (Saturation Drive)	12.5	25	50	kw
Drive Power	10	20	20	W
Beam Voltage	13	16	20	kVdc
Beam Current	2.8	3.82	5.4	Adc
1 db Bandwidth	8	8	8	Mc
Heater Voltage	26	26	26	Vdc
Heater Current	11.5	11.5	11.5	Adc
Length	59	61	61	in.
Diameter	10	10	10	in.
Weight (Approx.)	110	119	119	lbs.
RF Input Coupling	Type N Coaxial Connector for each Klystron			
RF Output Coupling	3⅛ inch, 50 ohm Line for each Klystron			
Cooling	Water and Forced Air for each Klystron			

ASSOCIATED KLYSTRON AMPLIFIER CIRCUIT ASSEMBLIES

Klystron Type	4KM70/100/150LA	4KM70/100/150LF	4KM70/100/150LH	
Circuit Assembly Catalog Number	H-163	H-156	H-171	
Length (With Tube)	59-61	59-61	59-61	in.
Width and Depth	29	29	29	in.
Weight	1800	1800	1800	lbs.

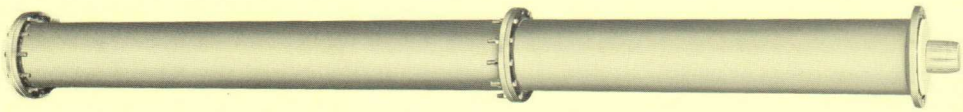
NEW PRODUCT

WATER LOADS

Eimac water loads provide convenient means for dissipating RF power at the frequencies covered by Eimac power klystrons. The power dissipated by these loads can be readily measured by calorimetric methods using auxiliary thermometers and flow measuring instruments.

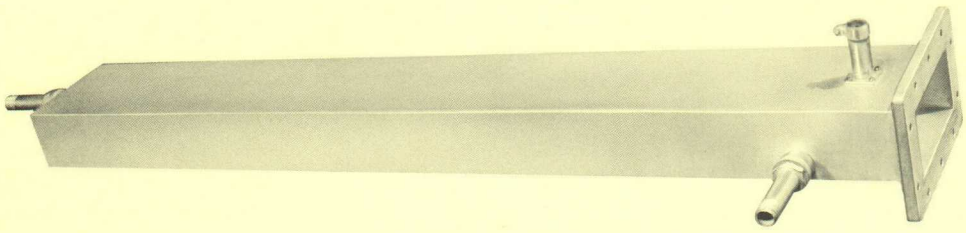
These water loads are available in both coaxial and waveguide form. In all cases, the RF power is dissipated directly into the liquid and therefore the chemical composition and temperature of the liquid will affect the VSWR which the load introduces into the transmission line or the waveguide to which it is connected. Tap water is generally suitable for use with these loads, although variations in VSWR will be noticed due to chemical variations of tap water in different localities. Mixtures of ethylene glycol and distilled water, often used in klystron cooling systems in frigid climates, are also suitable for use in Eimac water loads. For minimum VSWR the temperature of the liquid used with these loads should be kept as low as possible. The VSWR values listed below were obtained with liquid temperatures of approximately 25° C.

Eimac water loads can be adapted for pressurizing on request. The peak power ratings listed below are with pressurization.



WL-150

Catalog Number	Type	Frequency Mc	Average Power kW	Peak Power Mw	Max. VSWR	Length Inches	Weight Lbs.
WL-120	3⅛ in. Coaxial	500-1200	50	3	1.15:1	38	13
WL-130	3⅛ in. Coaxial	320-1200	50	3	1.1:1	80	25
WL-140	3⅛ in. Coaxial	200-1200	50	3	1.18:1	152	38
WL-150	6 ⅛ in. Coaxial	250-750	300	5	1.1:1	87	78
WL-160	6 ⅛ in. Coaxial	200-750	300	5	1.07:1	153	112
WL-201 / WL-202	WR-430 Waveguide	1700-2400	24	—	1.1:1	38	16
WL-210	WR-975 Waveguide	750-1000	100	1.25	1.15:1	81	78
WL-220	WR-2100 Waveguide	390-460	150	1.25	1.13:1	154	347



WL-201

POWER GRID TUBE DIVISION

Eitel-McCullough, Inc., manufactures a complete line of vacuum tubes and accessories including rectifiers, triodes, tetrodes, pentodes, pulse modulators, air-system sockets, heat dissipating connectors, contact-finger stock, vacuum switches, diffusion pumps and ionization gauges.

In addition to a standard line of glass-and-metal vacuum tubes, Eimac offers a selection of ceramic and metal triodes, tetrodes and pulse modulators. They have been specially designed to withstand severe environmental conditions.

Eimac power tubes are divided into two general classifications: the internal-anode, radiation-cooled glass types and the external-anode tubes, cooled by forced-air, convection or other means. Eimac electron power tubes, including coaxial-based tubes for high-frequency operation, water-cooled tubes with plate dissipation ratings to 300 kilowatts and higher, vapor-phase-cooled tubes with power dissipation ratings up to 100 kilowatts, breechblock-based tubes for rugged environments, and lightweight tubes for airborne and pulse applications, are available.

A newly expanded research and development program produces experimental new tube types and modifies existing products to meet customer requirements. Application engineering services are willingly offered.

Y-319

A compact, coolerless version of the 3CX100A5, the Y-319 features a threaded anode shank for fastening to a suitable heat sink. **See page 38**

3CPX100A5

A ceramic-metal UHF planar triode intended for pulse and high altitude applications. It is similar to the popular 3CX100A5 but features a longer grid-anode ceramic insulator with a higher voltage breakdown rating. **See page 39**

X2007

A new ceramic-metal, zero-bias triode intended for Class-B, linear amplifier service. Its forced air cooled external anode is rated at 300 watts dissipation.

X2034

A ceramic-metal version of the 3X2500A3. The use of ceramic construction minimizes glass heating at higher frequencies and increases the allowable operating temperature.

3X3000A7

The Eimac 3X3000A7 is a new zero-bias triode for Class-B linear application. It has a mu of 200, making it attractive for pulse modulator and voltage regulator circuits. **See page 45**

3CV30,000A3

A vapor-cooled triode, featuring high (30 kW) plate dissipation and a heavy (1 kW) filament. It is especially recommended for heavy duty applications such as industrial heating service. **See page 48**

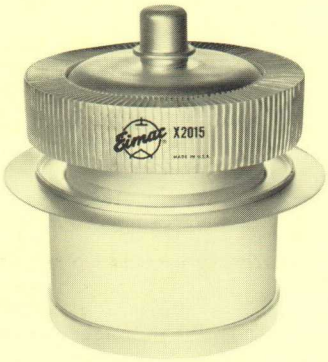
X2013

Designed specially for mobile and portable transmitters, the X2013 features a quick heating filament. A built-in control diode allows tube operation in 100 milliseconds.

NEW PRODUCTS

4CX600A

Made for use in distributed amplifiers, the 4CX600A radial beam tetrode features low lead inductances and low interelectrode capacitances. It has a plate dissipation rating of 600 watts and is useful to 1300 Mc.



X2015

The Eimac X2015 is a ceramic-metal tetrode featuring an exceptionally large cathode area. It is intended for grid pulsed UHF service to 500 Mc. with dc plate voltages to 25,000 volts.

4CX5000R

A ruggedized version of the 4CX5000A power tetrode, featuring sturdy mesh cathode construction. The 4CX5000R is an excellent choice for high power applications in severe environments. **See page 54**

4CX35,000C

Replaces the 4CX35,000A high power tetrode introduced last year. The 4CX35,000C is rated at 20 kV plate voltage in Class-C and Class-AB applications and has a plate dissipation rating of 35 kW. **See page 55**

4CW50,000C

The water cooled version of the high power tetrode, 4CW50,000C is capable of over 150 kW output power in Class-C service. Low cooling water requirements for the full 50 kW anode dissipation are unique to this tube. **See page 56**

4CV8000A

A conservative plate dissipation rating of 8000 watts is a feature of this vapor-cooled version of the 4CX3000A. It is recommended for Class-AB audio application as well as Class-C rf power amplifier service. **See page 57**

Y-322

An integral boiler version of the new 4CV8000A, the Y-322 allows simplified equipment design and operation in the anode up position.

4CV20,000A

Another addition to Eimac's line of vapor-cooled tetrodes, the 4CV20,000A is rated at 20 kW anode dissipation. Its large anode dissipation capability makes it useful in Class-AB linear applications where efficiency may be low. **See page 57**

4CV35,000A

A full 35 kW plate dissipation is available in this vapor-cooled version of the Eimac 4CX15,000A. It is intended for use as a modulator, amplifier or oscillator to 110 Mc. **See page 57**

4CV100,000C

The largest of Eimac's Power Grid Tubes, the 4CV100,000C power tetrode can dissipate 100 kW of plate power on its vapor-cooled anode. As a Class-C amplifier or oscillator it is capable of over 200 kW output with low driving power. **See page 57**

4CX125F

A 26.5 volt filament distinguishes the 4CX125F from the 4CX125C. These tubes are versions of the rugged 4CX300A, but feature horizontal anode fins suitable for transverse cooling air or liquid immersion. **See page 50**

4CX300Y

Formerly known as Y-260, the 4CX300Y is a special version of the 4CX300A tetrode. A higher plate current rating permits 60% greater input power. **See page 53**

4CX350A and 4CX350F

These tubes are externally identical to the 4CX250B but contain rugged internal features. In addition, they possess a higher transconductance, allowing a full output with very low drive in Class AB_1 circuits. Heater voltages are 6.0 and 26.5 volts respectively. **See page 53**

RECTIFIERS

INSTRUMENT DIODE

2-01C

A general-purpose UHF instrument diode capable of maintaining an accuracy of ±1 db to 700 megacycles. This diode is well suited to probe mounting and is useful as an indicator at frequencies as high as 3000 megacycles. The 2-01C is cooled by convection and radiation.

MAXIMUM RATINGS

PEAK INVERSE	1000 volts
D-C CURRENT	0.001 ampere
PLATE DISSIPATION	0.1 watt

CHARACTERISTICS

Cathode: Oxide-coated, unipotential
Heater:

Voltage	5.0 volts
Current	0.31 to 0.39 ampere
Max. Seal Temp.	175 °C
Length	1.813 inches
Diameter	0.563 inches
Net Weight	0.2 ounce

INTERNAL ANODE

2-25A

This small instant-heating, high-voltage diode is useful in low-power rectifier or voltage-doubler service. No forced-air cooling is required in most applications.

MAXIMUM RATINGS

PEAK INVERSE	25,000 volts
D-C CURRENT	0.050 ampere
PEAK CURRENT	1.0 ampere
PLATE DISSIPATION	15 watts

CHARACTERISTICS

Filament: Thoriated tungsten

Voltage	6.3 volts
Current	2.75 to 3.15 amperes
Base	Small 4-pin
Socket	E. F. Johnson Co. No. 122-224 or National Co. No. XC-4 or CIR-4
Plate Connector	HR-1
Max. Seal Temp.	225 °C
Max. Envelope Temp.	225 °C
Length	4.38 inches
Diameter	1.44 inches
Net Weight	1.2 ounces

MAXIMUM PERFORMANCE CAPABILITIES (Choke-Input Filter)

CIRCUIT	RMS INPUT VOLTAGE (volts)	D-C OUTPUT VOLTAGE (volts)	D-C OUTPUT CURRENT (amp)
1 - Phase Full Wave	17,700	8,000	0.1
1 - Phase Bridge	17,700	16,000	0.1
3 - Phase Full Wave	10,200 (per leg)	24,000	0.15

2-50A

A high-vacuum diode especially suitable for high-voltage applications where instant heating is desired. It is cooled by radiation and convection.

MAXIMUM RATINGS

PEAK INVERSE	30,000 volts
D-C CURRENT	0.075 ampere
PEAK CURRENT	1.0 ampere
PLATE DISSIPATION	30 watts

CHARACTERISTICS

Filament: Thoriated tungsten

Voltage	5.0 volts
Current	4 amperes
Base	Medium 4-pin bayonet
Socket	E. F. Johnson Co. No. 122-224 or National Co. No. XC-4 or CIR-4
Plate Connector	HR-3
Max. Seal Temp.	225 °C
Max. Envelope Temp.	225 °C
Length	5.50 inches
Diameter	1.82 inches
Net Weight	2.5 ounces

MAXIMUM PERFORMANCE CAPABILITIES (Choke-Input Filter)

CIRCUIT	RMS INPUT VOLTAGE (volts)	D-C OUTPUT VOLTAGE (volts)	D-C OUTPUT CURRENT (amp)
1 - Phase Full Wave	21,200	9,500	0.150
1 - Phase Bridge	21,200	19,000	0.150
3 - Phase Full Wave	12,200 (per leg)	28,500	0.225

8020/100R

A compact high-vacuum rectifier frequently used in high-voltage and voltage-multiplier power supplies. The 8020 is instant heating and is cooled by radiation and convection.

MAXIMUM RATINGS

PEAK INVERSE	40,000 volts
D-C CURRENT	0.100 ampere
PEAK CURRENT	1.5 amperes
PLATE DISSIPATION	60 watts

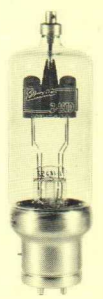
CHARACTERISTICS

Filament: Thoriated tungsten

Voltage	5.0 volts
Current	5.5 to 6.5 amperes
Base	Medium 4-pin bayonet
Socket	E. F. Johnson Co. No. 122-224 or National Co. No. XC-4 or CIR-4
Plate Connector	HR-8
Max. Seal Temp.	225 °C
Max. Envelope Temp.	225 °C
Length	8.0 inches
Diameter	2.32 inches
Net Weight	4 ounces

MAXIMUM PERFORMANCE CAPABILITIES (Choke-Input Filter)

CIRCUIT	RMS INPUT VOLTAGE (volts)	D-C OUTPUT VOLTAGE (volts)	D-C OUTPUT CURRENT (amp)
1 - Phase Full Wave	28,000	12,500	0.2
1 - Phase Bridge	28,000	25,000	0.2
3 - Phase Full Wave	16,300 (per leg)	38,000	0.3



2-150D

A unique high-voltage diode, actually two diodes in one envelope, suitable for use in many high-voltage rectifier and multiplier applications. The 2-150D is cooled by radiation and convection.

MAXIMUM RATINGS

PEAK INVERSE	30,000 volts
D-C CURRENT	0.250 ampere
PEAK CURRENT	3.0 amperes
PLATE DISSIPATION	90 watts

CHARACTERISTICS

Filament: Thoriated tungsten

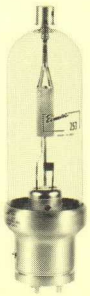
Voltage	5.0 volts
Current	11.6 to 13.2 amperes
Base	50-watt jumbo 4-pin bayonet
Socket	E. F. Johnson Co. No. 123-211 or National Co. No. XM-50
Plate Connector	HR-6
Max. Seal Temp.	225 °C
Max. Envelope Temp.	225 °C
Length	8.88 inches
Diameter	2.50 inches
Net Weight	9 ounces

MAXIMUM PERFORMANCE CAPABILITIES (Choke-Input Filter)

CIRCUIT	RMS INPUT VOLTAGE (volts)	D-C OUTPUT VOLTAGE (volts)	D-C OUTPUT CURRENT (amp)
1 - Phase Full Wave	21,200	9,500	0.50
1 - Phase Bridge	21,200	19,000	0.50
3 - Phase Full Wave	12,200 (per leg)	28,500	0.75

RECTIFIERS

INTERNAL ANODE



253

A high-vacuum radiation-cooled diode intended for use in high-voltage applications where conditions preclude the use of gas-filled rectifier tubes. In most cases, no forced air is required.

MAXIMUM RATINGS

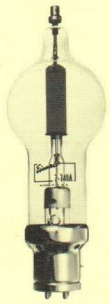
PEAK INVERSE	15,000 volts
D-C CURRENT	0.35 ampere
PEAK CURRENT	2.5 amperes
PLATE DISSIPATION	100 watts

CHARACTERISTICS

Filament: Thoriated tungsten	
Voltage	5.0 volts
Current	10.0 amperes
Base	50-watt jumbo 4-pin bayonet
Socket	E. F. Johnson Co. No. 123-211 or National Co. No. XM-50
Plate Connector	Eimac HR-8
Max. Seal Temp.	225 °C
Max. Envelope Temp.	225 °C
Length	8.75 inches
Diameter	2.50 inches
Net Weight	7 ounces

MAXIMUM PERFORMANCE CAPABILITIES (Choke-Input Filter)

CIRCUIT	RMS INPUT VOLTAGE (volts)	D-C OUTPUT VOLTAGE (volts)	D-C OUTPUT CURRENT (amp)
1 - Phase Full Wave	10,600	4,500	0.70
1 - Phase Bridge	10,600	9,000	0.70
3 - Phase Full Wave	6,150	13,500	1.0



2-240A

A high-vacuum, high-voltage rectifier frequently employed in three-phase klystron power supplies. It is cooled by radiation and convection in most equipments.

MAXIMUM RATINGS

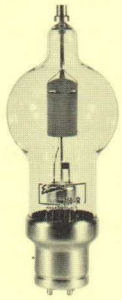
PEAK INVERSE	25,000 volts
D-C CURRENT	0.5 ampere
PEAK CURRENT	4.0 amperes
PLATE DISSIPATION	150 watts

CHARACTERISTICS

Filament: Thoriated tungsten	
Voltage	7.5 volts
Current	11.0 to 12.5 amperes
Base	50-watt jumbo 4-pin bayonet
Socket	E. F. Johnson Co. No. 123-211 or National Co. No. XM-50
Plate Connector	HR-6
Max. Seal Temp.	225 °C
Max. Envelope Temp.	225 °C
Length	11.2 inches
Diameter	3.82 inches
Net Weight	10 ounces

MAXIMUM PERFORMANCE CAPABILITIES (Choke-Input Filter)

CIRCUIT	RMS INPUT VOLTAGE (volts)	D-C OUTPUT VOLTAGE (volts)	D-C OUTPUT CURRENT (amps)
1 - Phase Full Wave	18,000	8,000	1.0
1 - Phase Bridge	18,000	16,000	1.0
3 - Phase Full Wave	10,200 (per leg)	24,000	1.5



250R

A high-vacuum radiation-cooled diode with instant-heating capability, the 250R is used in many high-voltage applications. No forced air is required in most cases.

MAXIMUM RATINGS

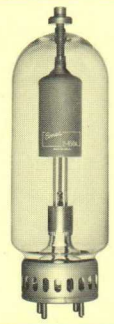
PEAK INVERSE	60,000 volts
D-C CURRENT	0.25 ampere
PEAK CURRENT	2.5 amperes
PLATE DISSIPATION	150 watts

CHARACTERISTICS

Filament: Thoriated tungsten	
Voltage	5.0 volts
Current	9.7 to 11.2 amperes
Base	50-watt jumbo 4-pin bayonet
Socket	E. F. Johnson Co. No. 123-211 or National Co. No. XM-50
Plate Connector	HR-6
Max. Seal Temp.	225 °C
Max. Envelope Temp.	225 °C
Length	10.13 inches
Diameter	3.82 inches
Net Weight	10 pounds

MAXIMUM PERFORMANCE CAPABILITIES (Choke-Input Filter)

CIRCUIT	RMS INPUT VOLTAGE (volts)	D-C OUTPUT VOLTAGE (volts)	D-C OUTPUT CURRENT (amp)
1 - Phase Full Wave	42,000	19,000	0.50
1 - Phase Bridge	42,000	38,000	0.50
3 - Phase Full Wave	24,500 (per leg)	57,000	0.75



2-450A

A high-vacuum, high-voltage rectifier designed to replace parallel 2-240A's in three-phase power supplies. Additionally, it enjoys a higher plate dissipation capability and a higher peak-inverse voltage rating. It is cooled by radiation and convection.

MAXIMUM RATINGS

PEAK INVERSE	30,000 volts
D-C CURRENT	1.0 ampere
PEAK CURRENT	8.0 amperes
PLATE DISSIPATION	450 watts

CHARACTERISTICS

Filament: Thoriated tungsten	
Voltage	7.5 volts
Current	25.0 to 28.0 amperes
Base	4-pin metal shell
Socket	E. F. Johnson Co. No. 124-214
Plate Connector	HR-8
Max. Seal Temp.	225 °C
Max. Envelope Temp.	250 °C
Length	13.625 inches
Diameter	4.625 inches
Net Weight	2.4 pounds

MAXIMUM PERFORMANCE CAPABILITIES (Choke-Input Filter)

CIRCUIT	RMS INPUT VOLTAGE (volts)	D-C OUTPUT VOLTAGE (volts)	D-C OUTPUT CURRENT (amps)
1 - Phase Full Wave	21,200	9,500	2.0
1 - Phase Bridge	21,200	19,000	2.0
3 - Phase Full Wave	12,200 (per leg)	28,500	3.0

2-2000A

A large high-vacuum rectifier with a high peak-inverse voltage rating and high plate-dissipation capability. The 2-2000A is cooled by radiation and convection; no forced-air cooling is required in most installations.

MAXIMUM RATINGS

PEAK INVERSE	75,000 volts
D-C CURRENT	0.750 ampere
PEAK CURRENT	12.0 amperes
PLATE DISSIPATION	1200 watts

CHARACTERISTICS

Filament: Thoriated tungsten	
Voltage	10.0 volts
Current	22.0 to 25.0 amperes
Base	Special 4-pin
Socket	E. F. Johnson Co. No. 124-214
Plate Connector	HR-8
Max. Seal Temp.	225 °C
Max. Envelope Temp.	225 °C
Length	17.8 inches
Diameter	8.13 inches
Net Weight	3 pounds

MAXIMUM PERFORMANCE CAPABILITIES (Choke-Input Filter)

CIRCUIT	RMS INPUT VOLTAGE (volts)	D-C OUTPUT VOLTAGE (volts)	D-C OUTPUT CURRENT (amps)
1 - Phase Full Wave	53,000	23,800	1.50
1 - Phase Bridge	53,000	47,600	1.50
3 - Phase Full Wave	30,600 (per leg)	71,500	2.25

RECTIFIERS

EXTERNAL ANODE

2X1000A

A high-vacuum diode intended for clipper-diode service, the 2X1000A may be used in circuits where the peak inverse voltage is as high as 25 kilovolts. It is cooled by forced air.

MAXIMUM RATINGS

PEAK INVERSE	25,000 volts
D-C CURRENT	1.25 amperes
PEAK CURRENT	25.0 amperes
PLATE DISSIPATION	1000 watts

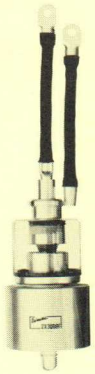
CHARACTERISTICS

Cathode: Oxide-coated, unipotential

Heater:	
Voltage	26.5 volts
Current	1.95 to 2.35 amperes
Base	Super jumbo 4-pin
Socket	E. F. Johnson Co. No. 122-244
Maximum Seal Temp.	150 °C
Maximum Anode-Core Temp.	200 °C
Length	7.188 inches
Diameter	3.125 inches
Net Weight	25.5 ounces

MAXIMUM PERFORMANCE CAPABILITIES (Pulse Clipper Diode Service)

CIRCUIT	PULSE DURATION (micro-seconds)	DUTY (percent)	PEAK INVERSE VOLTAGE (volts)
Thyratron Modulator Shunt Diode	2.0	0.1	25,000



2X3000F

A high-vacuum, forced-air cooled, external-anode diode intended for use in high-power rectifier units whenever high peak inverse voltages, extreme ambient temperatures, high operating frequency, or the production of high-frequency transients would prevent the use of mercury-vapor or gas-filled rectifier tubes.

MAXIMUM RATINGS

PEAK INVERSE	25,000 volts
D-C CURRENT	3.0 amperes
PEAK CURRENT	20.0 amperes
PLATE DISSIPATION	3000 watts

CHARACTERISTICS

Filament: Thoriated tungsten

Voltage	7.5 volts
Current	49 to 54 amperes
Maximum Seal Temp.	175 °C
Maximum Anode-Core Temp.	175 °C
Length	8.375 inches
Diameter	4.125 inches
Net Weight	5.7 pounds

MAXIMUM PERFORMANCE CAPABILITIES (Choke-Input Filter)

CIRCUIT	RMS INPUT VOLTAGE (volts)	D-C OUTPUT VOLTAGE (volts)	D-C OUTPUT CURRENT (amps)
1 - Phase Full Wave	17,700	8,000	6.0
1 - Phase Bridge	17,700	16,000	6.0
3 - Phase Full Wave	10,200 (per leg)	24,000	9.0

MERCURY VAPOR

RX21A

A half-wave, mercury-vapor rectifier incorporating features which enable it to withstand high peak inverse voltages and to supply high d-c current. A shielded ribbon filament provides a large emission reserve and assures long life.

MAXIMUM RATINGS

PEAK INVERSE	11,000 volts
D-C CURRENT	0.750 ampere
PEAK CURRENT	3.0 amperes
SUPPLY FREQUENCY	150 cps

CHARACTERISTICS

Filament: Coated

Voltage	2.5 volts
Current	9.2 to 10.8 amperes
Base	Medium 5-pin
Max. Cond. Mercury Temp.	20-60 °C
Length	8.0 inches
Diameter	2.25 inches
Net Weight	5 ounces

MAXIMUM PERFORMANCE CAPABILITIES (Choke-Input Filter)

CIRCUIT	RMS INPUT VOLTAGE (volts)	D-C OUTPUT VOLTAGE (volts)	D-C OUTPUT CURRENT (amps)
1 - Phase Full Wave	7,800	3,500	1.50
1 - Phase Bridge	7,800	7,000	1.50
3 - Phase Full Wave	4,500 (per leg)	10,500	2.25

MERCURY VAPOR ■ GRID CONTROLLED

KY21A

A grid-controlled mercury-vapor rectifier recommended for use in power supplies or control circuits where a variable voltage at high current is desired.

MAXIMUM RATINGS

PEAK INVERSE	11,000 volts
PEAK FORWARD	5,500 volts
D-C CURRENT	0.75 ampere
PEAK CURRENT	3.0 amperes
SUPPLY FREQUENCY	150 cps

CHARACTERISTICS

Filament: Coated

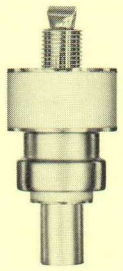
Voltage	2.5 volts
Current	9.2 to 10.8 amperes
Base	Medium 5-pin
Max. Cond. Mercury Temp.	20-60 °C
Length	8.0 inches
Diameter	2.25 inches
Net Weight	5 ounces

MAXIMUM PERFORMANCE CAPABILITIES (Choke-Input Filter)

CIRCUIT	RMS INPUT VOLTAGE (volts)	D-C OUTPUT VOLTAGE (volts)	D-C OUTPUT CURRENT (amps)
1 - Phase Full Wave	7,800	3,500	1.50
1 - Phase Bridge	7,800	7,000	1.50
3 - Phase Full Wave	4,500 (per leg)	10,500	2.25

TRIODES

UHF



Y-319

A compact, coolerless version of the 3CX100A5, the Y-319 features a threaded anode shank for fastening to a suitable heat sink. The external metal surfaces of the Y-319 are gold plated.

Its capabilities are dependent on use of an efficient heat sink. Up to 100 watts of plate dissipation can be tolerated in an optimum heat sink assembly.

PLATE DISSIPATION up to 100 watts
FREQUENCY FOR MAXIMUM RATINGS 3000 megacycles
COOLING Conduction

CHARACTERISTICS

Cathode: Oxide-coated, unipotential
Heater:
Voltage 6.0 volts
Current 0.90 to 1.05 amperes
Capacitances:
Grid-Cathode 5.60 to 7.00 uufd
Grid-Plate 1.86 to 2.15 uufd
Plate-Cathode 0.035 uufd

Base Coaxial
Maximum Seal Temp. 250 °C
Maximum Anode Temp. 250 °C
Maximum Height 2.276 inches
Maximum Diameter 1.195 inches
Net Weight 1.6 ounces

Class of Operation	Type of Service	Maximum Pulse Ratings: Plate Voltage (volts)	Plate Current (amps)	Plate Diss. (watts)	Grid Diss. (watts)	Typical Pulse Operation: Plate Voltage (volts)	Plate Current (amps)	Duty	Output Power (watts)
C	Plate-Pulsed Power Oscillator — 3000 megacycles	3500	3.0	10	2	3500	3.0	0.0025	1600
C	Grid Pulsed Amplifier — 3000 megacycles	1600	3.0	10	2	1600	3.0	0.0025	2

3CPN10A5 /7815

This ceramic and metal, UHF, planar triode is designed primarily for use in low-duty pulse applications. It is capable of delivering 1600 watts pulse output power at 3000 megacycles at a duty of 0.0025.

The electrical characteristics of the 3CPN10A5 are similar to those of the 3CX100A5. The nominal plate dissipation rating of 10 watts may be exceeded if sufficient additional cooling is provided to maintain the anode and seal temperatures below the specified limits.

PLATE DISSIPATION 10 watts
FREQUENCY FOR MAXIMUM RATINGS 3000 megacycles
COOLING Conduction or Forced Air

CHARACTERISTICS

·e: Oxide-coated, unipotential
Heater:
Voltage 6.0 volts
Current 0.90 to 1.05 amperes
Capacitances:
Grid-Cathode 5.60 to 7.00 uufd
Grid-Plate 1.86 to 2.15 uufd
Plate-Cathode 0.035 uufd

Base Coaxial
Maximum Seal Temp. 250 °C
Maximum Anode Temp. 250 °C
Maximum Height 2.276 inches
Maximum Diameter 1.195 inches
Net Weight 1.6 ounces

Class of Operation	Type of Service	Maximum Pulse Ratings: Plate Voltage (volts)	Plate Current (amps)	Plate Diss. (watts)	Grid Diss. (watts)	Typical Pulse Operation: Plate Voltage (volts)	Plate Current (amps)	Duty	Output Power (watts)
C	Plate-Pulsed Power Oscillator — 3000 megacycles	3500	3.0	10	2	3500	3.0	0.0025	1600
C	Grid Pulsed Amplifier — 3000 megacycles	1600	3.0	10	2	1600	3.0	0.0025	2

2C39A

This old favorite among the many different UHF planar triodes is now supplied in an exclusive ceramic-and-metal envelope which assures higher efficiency and greater uniformity. The 2C39A is widely used as an oscillator, multiplier, or amplifier at frequencies up to 2500 megacycles. It is especially suitable for applications where performance requirements are not stringent or where economy is a major factor

PLATE DISSIPATION 100 watts
FREQUENCY FOR MAXIMUM RATINGS 2500 megacycles
COOLING Forced Air

CHARACTERISTICS

Cathode: Oxide-coated, unipotential
Heater:
Voltage 6.3 volts
Current 0.95 to 1.10 amperes
Capacitances:
Grid-Cathode 5.60 to 7.60 uufd
Grid-Plate 1.86 to 2.16 uufd
Plate-Cathode 0.035 uufd

Base Coaxial
Maximum Seal Temp. 175 °C
Maximum Anode-Core Temp. 175 °C
Maximum Height 2.75 inches
Maximum Diameter 1.27 inches
Net Weight 2.5 ounces

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Cathode Current (amp)	Plate Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Plate Current (amp)	Drive Power (watts)	Output Power (watts)
C	Radio-Frequency Power Amplifier and Oscillator	1000	0.125	100	2	800	0.080	6	27
C	Plate-Modulated Radio-Frequency Power Amplifier and Oscillator	600	0.100	70	2	600	0.065	5	16

2C39WA

The 2C39WA is a ceramic-metal planar triode of the 2C39A family designed to meet exacting military requirements. Its physical and electrical characteristics are similar to other tubes of this family, but extended testing and a tight specification assure a premium tube with uniform performance characteristics.

PLATE DISSIPATION 100 watts
FREQUENCY FOR MAXIMUM RATINGS 2500 megacycles
COOLING Forced Air

CHARACTERISTICS

Cathode: Oxide-coated, unipotential
Heater:
Voltage 6.0 volts
Current 0.90 to 1.05 amperes
Capacitances:
Grid-Cathode 5.60 to 7.60 uufd
Grid-Plate 1.86 to 2.16 uufd
Plate-Cathode 0.035 uufd

Base Coaxial
Maximum Seal Temp. 200 °C
Maximum Anode-Core Temp. 200 °C
Maximum Height 2.75 inches
Maximum Diameter 1.27 inches
Net Weight 2.5 ounces

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Cathode Current (amp)	Plate Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Plate Current (amp)	Drive Power (watts)	Output Power (watts)
C	Radio-Frequency Power Amplifier and Oscillator	1000	0.125	100	2	800	0.080	6	27
C	Plate-Modulated Radio-Frequency Power Amplifier and Oscillator	600	0.100	70	2	600	0.065	5	16

NEW PRODUCT

TRIODES

UHF

3CX100A5/7289 and 3CX100F5/8250

The 3CX100A5 ceramic and metal planar UHF triode is intended to supersede all tubes in the 2C39A family. Narrow mechanical tolerances plus exacting electrical testing assure tube-to-tube uniformity. The Eimac 3X100A5 unilaterally replaces 2C39A's and other associated tube types in most equipments without requiring electrical or mechanical modification. A special version, the 3CX100F5 incorporates a 26.5 volt heater.

PLATE DISSIPATION 100 watts
FREQUENCY FOR MAXIMUM RATINGS 2500 megacycles
COOLING Forced Air

CHARACTERISTICS

Cathode: Oxide-coated, unipotential

Heater:	3CX100F5	3CX100A5
Voltage	26.5	6.0 volts
Current	0.2 to 0.24	0.90 to 1.05 amperes

Capacitances:

Grid-Cathode	5.6 to 7.0 uufd
Grid-Plate	1.95 to 2.15 uufd
Plate-Cathode	0.035 uufd

Base	Coaxial
Maximum Seal Temp.	250 °C
Maximum Anode-Core Temp.	250 °C
Maximum Height	2.701 inches
Maximum Diameter	1.264 inches
Net Weight	2.5 ounces

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Cathode Current (amps)	Plate Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	Radio-Frequency Power Amplifier and Oscillator — 500 megacycles	1000	0.125	100	2	800	0.080	6	27
C	Radio-Frequency Power Amplifier or Oscillator — 2500 megacycles	1000	0.125	100	2	900	0.090	—	15
C	Plate-Modulated Radio-Frequency Power Amplifier or Oscillator — 500 megacycles	600	0.100	70	2	600	0.065	5	16

3CPX100A5/7815R

A ceramic-metal UHF planar triode intended for pulse and high altitude applications. It is similar to the popular 3CX100A5 but features a longer grid-anode ceramic insulator with a higher voltage breakdown rating. The pulse ratings are applicable to 70,000 feet altitude making the 3CPX100A5 especially suitable for airborne applications.

PLATE DISSIPATION 100 watts
FREQUENCY FOR MAXIMUM RATINGS 2500 megacycles
COOLING Forced Air

CHARACTERISTICS

Cathode: Oxide-coated, unipotential

Heater:

Voltage	6.0 volts
Current	0.90 to 1.05 amperes

Capacitances:

Grid-Cathode	5.6 to 7.0 uufd
Grid-Plate	1.95 to 2.15 uufd
Plate-Cathode	0.035 uufd

Base	Coaxial
Maximum Seal Temp.	250 °C
Maximum Anode-Core Temp.	250 °C
Maximum Height	2.701 inches
Maximum Diameter	1.264 inches
Net Weight	2.5 ounces

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Cathode Current (amps)	Plate Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	Radio-Frequency Power Amplifier and Oscillator — 500 megacycles	1000	0.125	100	2	800	0.080	6	27
C	Radio-Frequency Power Amplifier or Oscillator — 2500 megacycles	1000	0.125	100	2	900	0.090	—	15
C	Plate-Modulated Radio-Frequency Power Amplifier or Oscillator — 500 megacycles	600	0.100	70	2	600	0.065	5	16

INTERNAL ANODE

25T

The 25T is a radiation-cooled triode suitable for use at maximum ratings through 60 megacycles. A plate-dissipation power of 25 watts is allowable in most installations without the necessity for forced-air cooling.

PLATE DISSIPATION 25 watts
FREQUENCY FOR MAXIMUM RATINGS 60 megacycles
COOLING Convection and Radiation

CHARACTERISTICS

Filament: Thoriated tungsten

Voltage	6.3 volts
Current	2.80 to 3.15 amperes

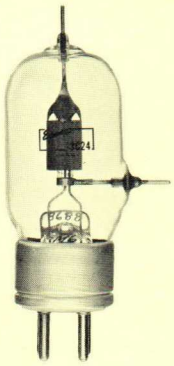
Capacitances:

Grid-Filament	1.95 to 2.75 uufd
Grid-Plate	1.3 to 1.7 uufd
Plate-Filament	0.1 to 0.3 uufd

Base	Small 4-pin
Socket	Johnson 122-224, National XC-4 or CIR-4
Maximum Seal Temp.	200 °C
Maximum Envelope Temp.	225 °C
Maximum Height	4.38 inches
Maximum Diameter	1.44 inches
Net Weight	1.5 ounces

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amp)	Plate Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Plate Current (amp)	Drive Power (watts)	Output Power (watts)
AB_2	Audio-Frequency Power Amplifier and Modulator	2000	0.075	25	7	1250	0.130*	3.4*	112*
C	Radio-Frequency Power Amplifier and Oscillator	2000	0.075	25	7	2000	0.063	4.0	100
C	Plate-Modulated Radio-Frequency Power Amplifier	1600	0.060	17	7	1600	0.053	3.1	68

*Two tubes.



3C24

A general-purpose radiation-cooled triode, the 3C24 has a 25-watt plate-dissipation rating and is capable of operation at maximum ratings to 60 megacycles. No forced air is required in most applications.

PLATE DISSIPATION 25 watts
FREQUENCY FOR MAXIMUM RATINGS 60 megacycles
COOLING Convection and Radiation

CHARACTERISTICS

Filament: Thoriated tungsten

Voltage	6.3 volts
Current	2.8 to 3.15 amperes

Capacitances:

Grid-Filament	1.4 to 2.2 uufd
Grid-Plate	1.4 to 1.8 uufd
Plate-Filament	0.1 to 0.3 uufd

Base	UX small 4-pin
Socket	Johnson 122-224, National XC4 or CIR-4
Maximum Seal Temp.	200 °C
Maximum Envelope Temp.	225 °C
Maximum Height	4.375 inches
Maximum Diameter	1.438 inches
Net Weight	1.5 ounces

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amp)	Plate Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Plate Current (amp)	Drive Power (watts)	Output Power (watts)
AB_2	Audio-Frequency Power Amplifier and Modulator	2000	0.075	25	7	1250	0.130*	3.4*	112*
C	Radio-Frequency Power Amplifier and Oscillator	2000	0.075	25	7	2000	0.063	4.0	100
C	Plate-Modulated Radio-Frequency Power Amplifier	1600	0.060	17	7	1600	0.053	3.1	68

*Two tubes.

NEW PRODUCT

TRIODES

INTERNAL ANODE

35T

The 35T is a radiation-cooled triode with a 50-watt plate-dissipation capability. It is suitable for both audio-frequency and radio-frequency service; maximum ratings apply to 100 megacycles.

PLATE DISSIPATION 50 watts
FREQUENCY FOR MAXIMUM RATINGS 100 megacycles
COOLING Convection & Radiation

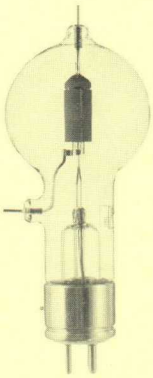
CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 5.0 volts
Current 3.6 to 4.2 amperes
Capacitances:
Grid-Filament 3.0 to 5.0 uufd
Grid-Plate 1.4 to 2.2 uufd
Plate-Filament 0.08 to 0.23 uufd

Base Medium 4-pin bayonet
Socket Johnson 122-224, National XC-4 or CIR-4
Maximum Seal Temp. 200 °C
Maximum Envelope Temp. 225 °C
Maximum Height 5.500 inches
Maximum Diameter 1.813 inches
Net Weight 2.5 ounces

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amp)	Plate Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Plate Current (amp)	Drive Power (watts)	Output Power (watts)
AB_2	Audio-Frequency Power Amplifier and Modulator	2000	0.150	50	15	2000	0.167*	4*	235*
C	Radio-Frequency Power Amplifier and Oscillator	2000	0.150	50	15	2000	0.125	6.8	200
C	Plate-Modulated Radio-Frequency Power Amplifier	1600	0.120	33	15	1500	0.090	11	105

*Two tubes.



75TH

A general-purpose high-mu (20) triode with a plate-dissipation rating of 75 watts and with maximum ratings applicable to 40 megacycles. The 75TH may be used without forced-air cooling under most conditions.

PLATE DISSIPATION 75 watts
FREQUENCY FOR MAXIMUM RATINGS 40 megacycles
COOLING Convection & Radiation

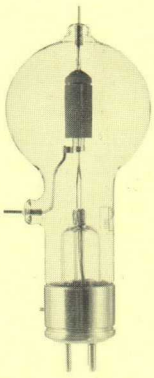
CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 5.0 volts
Current 5.8 to 6.6 amperes
Capacitances:
Grid-Filament 2.0 to 3.4 uufd
Grid-Plate 1.7 to 2.9 uufd
Plate-Filament 0.15 to 0.35 uufd

Base Medium 4-pin bayonet
Socket Johnson 122-224, National XC-4 or CIR-4
Maximum Seal Temp. 200 °C
Maximum Envelope Temp. 225 °C
Maximum Height 7.250 inches
Maximum Diameter 2.810 inches
Net Weight 3 ounces

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amp)	Plate Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Plate Current (amp)	Drive Power (watts)	Output Power (watts)
B	Audio-Frequency Power Amplifier and Modulator	3000	0.225	75	16	2000	0.225*	3*	300*
C	Radio-Frequency Power Amplifier and Oscillator	3000	0.225	75	16	2000	0.150	10	225
C	Plate-Modulated Radio-Frequency Power Amplifier	2400	0.180	50	16	2000	0.110	6	170

*Two tubes.



75TL

A general-purpose low-mu (12) triode with a plate-dissipation rating of 75 watts and with maximum ratings applicable to 40 megacycles. The 75TL may be used without forced-air cooling under most conditions.

PLATE DISSIPATION 75 watts
FREQUENCY FOR MAXIMUM RATINGS 40 megacycles
COOLING Convection and Radiation

CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 5.0 volts
Current 5.8 to 6.6 amperes
Capacitances:
Grid-Filament 1.8 to 3.2 uufd
Grid-Plate 1.8 to 3.2 uufd
Plate-Filament 0.30 to 0.50 uufd

Base Medium 4-pin bayonet
Socket Johnson 122-224, National XC-4 or CIR-4
Maximum Seal Temp. 200 °C
Maximum Envelope Temp. 225 °C
Maximum Height 7.250 inches
Maximum Diameter 2.810 inches
Net Weight 3 ounces

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amp)	Plate Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Plate Current (amp)	Drive Power (watts)	Output Power (watts)
AB_1	Audio-Frequency Power Amplifier and Modulator	3000	0.225	75	—	2000	0.130*	0	110*
C	Radio-Frequency Power Amplifier and Oscillator	3000	0.225	75	13	2000	0.150	8	225
C	Plate-Modulated Radio-Frequency Power Amplifier	2400	0.180	50	13	2000	0.130	14	210

*Two tubes.

100TH

This radiation-cooled general-purpose high-mu (38) triode is useable at maximum ratings through 40 megacycles. Forced-air cooling is not required in most applications.

PLATE DISSIPATION 100 watts
FREQUENCY FOR MAXIMUM RATINGS 40 megacycles
COOLING Convection and Radiation

CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 5.0 volts
Current 5.8 to 6.6 amperes
Capacitances:
Grid-Filament 2.5 to 3.4 uufd
Grid-Plate 1.7 to 2.3 uufd
Plate-Filament 0.45 uufd

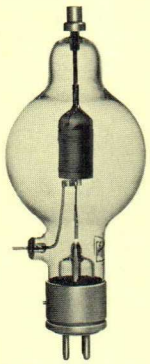
Base Medium 4-pin bayonet
Socket Johnson 122-224, National XC-4 or CIR-4
Maximum Seal Temp. 200 °C
Maximum Envelope Temp. 225 °C
Maximum Height 7.750 inches
Maximum Diameter 3.187 inches
Net Weight 4 ounces

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amp)	Plate Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Plate Current (amp)	Drive Power (watts)	Output Power (watts)
AB_2	Audio-Frequency Power Amplifier and Modulator	3000	0.225	100	20	2500	0.250*	7.5*	425*
C	Radio-Frequency Power Amplifier and Oscillator	3000	0.225	100	20	3000	0.165	18	400
C	Plate-Modulated Radio-Frequency Power Amplifier	2500	0.180	65	20	2500	0.140	17	285

*Two tubes.

TRIODES

INTERNAL ANODE



100TL

This radiation-cooled general-purpose low-mu (14) triode is useable at maximum ratings through 40 megacycles. Forced-air cooling is not required in most applications.

PLATE DISSIPATION 100 watts
FREQUENCY FOR MAXIMUM RATINGS 40 megacycles
COOLING Convection and Radiation

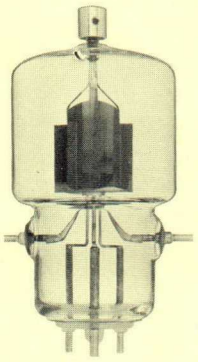
CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 5.0 volts
Current 5.8 to 6.6 amperes
Capacitances:
Grid-Filament 2.3 uufd
Grid-Plate 2.0 uufd
Plate-Filament 0.4 uufd

Base Medium 4-pin bayonet
Socket Johnson 122-224, National XC-4 or CIR-4
Maximum Seal Temp. 200 °C
Maximum Envelope Temp. 225 °C
Maximum Height 7.750 inches
Maximum Diameter 3.187 inches
Net Weight 4 ounces

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amp)	Plate Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Plate Current (amp)	Drive Power (watts)	Output Power (watts)
AB_2	Audio-Frequency Power Amplifier and Modulator	3000	0.225	100	15	2500	0.250*	10*	425*
C	Radio-Frequency Power Amplifier and Oscillator	3000	0.225	100	15	3000	0.165	20	400
C	Plate-Modulated Radio-Frequency Power Amplifier	2500	0.180	65	15	2500	0.140	23	285

*Two tubes.



592/3-200A3

This triode features short low-inductance grid leads and a center-tapped thoriated-tungsten filament. Maximum ratings apply at frequencies up to 150 megacycles; cooling is by radiation and forced air.

PLATE DISSIPATION 200 watts
FREQUENCY FOR MAXIMUM RATINGS 150 megacycles
COOLING Radiation and Forced Air

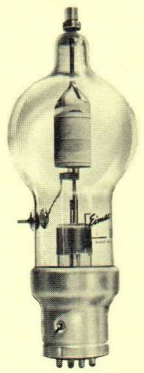
CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 10.0 volts
Current 4.7 to 5.3 amperes
Capacitances:
Grid-Filament 3.6 uufd
Grid-Plate 3.3 uufd
Plate-Filament 0.29 uufd

Maximum Seal Temp. 175 °C
Maximum Envelope Temp. 225 °C
Maximum Height 6.0 inches
Maximum Diameter 2.875 inches
Net Weight 6 ounces

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amp)	Plate Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Plate Current (amp)	Drive Power (watts)	Output Power (watts)
B	Audio-Frequency Power Amplifier and Modulator	3500	0.250	200	25	3000	0.400*	20*	820*
C	Radio-Frequency Power Amplifier and Oscillator	3500	0.250	200	25	3500	0.228	15	600
C	Plate-Modulated Radio-Frequency Power Amplifier	2600	0.200	130	25	2500	0.200	19	375

*Two tubes.



250TH

A high-power high-mu (37) triode for general usage. The 250TH may be employed at maximum ratings through 40 megacycles; forced-air cooling is not required in most applications.

PLATE DISSIPATION 250 watts
FREQUENCY FOR MAXIMUM RATINGS 40 megacycles
COOLING Convection and Radiation

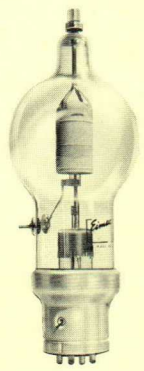
CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 5.0 volts
Current 9.7 to 11.2 amperes
Capacitances:
Grid-Filament 3.7 to 5.1 uufd
Grid-Plate 2.2 to 3.0 uufd
Plate-Filament 0.6 uufd

Base Special 4-pin
Socket Johnson 123-211, National XM-50
Maximum Seal Temp. 200 °C
Maximum Envelope Temp. 225 °C
Maximum Height 10.125 inches
Maximum Diameter 3.813 inches
Net Weight 10 ounces

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amp)	Plate Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Plate Current (amp)	Drive Power (watts)	Output Power (watts)
AB_2	Audio-Frequency Power Amplifier and Modulator	4000	0.350	250	40	3000	0.560*	42*	1180*
C	Radio-Frequency Power Amplifier and Oscillator	4000	0.350	250	40	4000	0.313	39	1000
C	Plate-Modulated Radio-Frequency Power Amplifier	3200	0.280	165	40	3000	0.200	14	435

*Two tubes.



250TL

A high-power low-mu (14) triode for general usage. The 250TL may be employed at maximum ratings through 40 megacycles; forced-air cooling is not required in most applications.

PLATE DISSIPATION 250 watts
FREQUENCY FOR MAXIMUM RATINGS 40 megacycles
COOLING Convection and Radiation

CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 5.0 volts
Current 9.7 to 11.2 amperes
Capacitances:
Grid-Filament 3.2 to 4.3 uufd
Grid-Plate 2.5 to 3.5 uufd
Plate-Filament 0.4 to 0.7 uufd

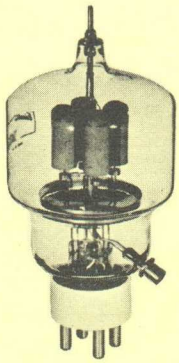
Base Special 4-pin
Socket Johnson 123-211, National XM-50
Maximum Seal Temp. 200 °C
Maximum Envelope Temp. 225 °C
Maximum Height 10.125 inches
Maximum Diameter 3.813 inches
Net Weight 10 ounces

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amp)	Plate Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Plate Current (amp)	Drive Power (watts)	Output Power (watts)
AB_2	Audio-Frequency Power Amplifier and Modulator	4000	0.350	250	35	3000	0.500*	16*	1000*
C	Radio-Frequency Power Amplifier and Oscillator	4000	0.350	250	35	4000	0.310	33	1000
C	Plate-Modulated Radio-Frequency Power Amplifier	3200	0.280	165	35	3000	0.200	11	435

*Two tubes.

TRIODES

INTERNAL ANODE



304TH

A unique high-mu (20) triode, actually four paralleled triodes in one envelope, often employed in pulse service where high peak currents are demanded. The 304TH is also an excellent choice for amplifier or oscillator applications up to 40 megacycles when high output power is required and where radiation cooling is desired.

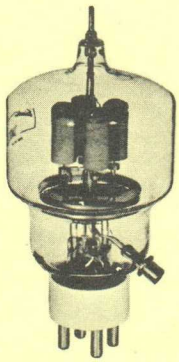
PLATE DISSIPATION 300 watts
FREQUENCY FOR MAXIMUM RATINGS 40 megacycles
COOLING Convection and Radiation

CHARACTERISTICS

Filament: Thoriated tungsten		Base	Special 4-pin
Voltage	5.0 volts	Socket	Johnson 124-213
Current	24.0 to 28.0 amperes	Maximum Seal Temp.	200 °C
Capacitances:		Maximum Envelope Temp.	225 °C
Grid-Filament	12 to 16 uufd	Maximum Height	7.625 inches
Grid-Plate	8 to 11 uufd	Maximum Diameter	3.563 inches
Plate-Filament	1.0 uufd	Net Weight	9 ounces

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amp)	Plate Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Plate Current (amp)	Drive Power (watts)	Output Power (watts)
AB_2	Audio-Frequency Power Amplifier and Modulator	3000	0.900	300	60	3000	0.665*	14*	1400*
C	Radio-Frequency Power Amplifier and Oscillator	3000	0.900	300	60	3000	0.500	53	1200
C	Plate-Modulated Radio-Frequency Power Amplifier	2500	0.750	200	60	2500	0.400	29	800

*Two tubes.



304TL

A unique low-mu (12) triode, actually four paralleled triodes in one envelope, often employed in pulse service where high peak currents are demanded. The 304TL is also an excellent choice for amplifier or oscillator applications up to 40 megacycles when high output power is required and where radiation cooling is desired.

PLATE DISSIPATION 300 watts
FREQUENCY FOR MAXIMUM RATINGS 40 megacycles
COOLING Convection and Radiation

CHARACTERISTICS

Filament: Thoriated tungsten		Base	Special 4-pin
Voltage	5.0 volts	Socket	Johnson 124-213
Current	24.0 to 28.0 amperes	Maximum Seal Temp.	200 °C
Capacitances:		Maximum Envelope Temp.	225 °C
Grid-Filament	10.0 to 14.3 uufd	Maximum Height	7.625 inches
Grid-Plate	7.1 to 10.2 uufd	Maximum Diameter	3.563 inches
Plate-Filament	0.9 uufd	Net Weight	9 ounces

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amp)	Plate Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Plate Current (amp)	Drive Power (watts)	Output Power (watts)
AB_1	Audio-Frequency Power Amplifier and Modulator	3000	0.900	300	—	3000	0.444*	0	730*
AB_2	Audio-Frequency Power Amplifier and Modulator	3000	0.900	300	50	3000	0.800*	55*	1800*
C	Radio-Frequency Power Amplifier and Oscillator	3000	0.900	300	50	3000	0.500	40	1200
C	Plate-Modulated Radio-Frequency Power Amplifier	2500	0.700	200	50	2500	0.450	40	925

*Two tubes.

3-400Z

The Eimac 3-400Z is a new zero-bias triode intended for linear amplifier applications. This tube may be used as a Class B R-F amplifier in either the grid-driven or cathode-driven connection, or two 3-400Z's may be used in push-pull as a grid-driven Class B audio amplifier or modulator. At a plate voltage of 3000 volts 1KW PEP input can be run with a single 3-400Z, providing a power gain of over 20 in the cathode-driven connection.

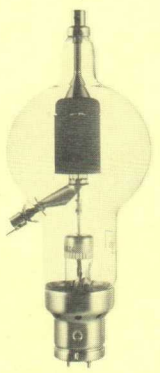
MAXIMUM PLATE DISSIPATION 400 Watts
FREQUENCY FOR MAXIMUM RATINGS 110 Megacycles
COOLING Radiation and Forced Air

CHARACTERISTICS

Filament: Thoriated tungsten		Base	5-pin, Special
Voltage	5.0 volts	Socket	Eimac SK-410
Current	13.5 to 14.7 amperes	Maximum Base Temp.	200 °C
Capacitances (Grounded Filament):		Maximum Plate Seal Temp.	225 °C
Grid-Filament	6.0 to 9.0 uufd	Maximum Height	5.25 inches
Grid-Plate	4.0 to 5.3 uufd	Maximum Diameter	3.57 inches
Plate-Filament	0.11 uufd	Net Weight	7 ounces

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amps)	Plate Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
B	Audio-Frequency Power Amplifier and Modulator	3000	0.400	400	20	3000	0.666*	26	1310*
B	Radio-Frequency Linear Power Amplifier—SSB Grounded-Grid	3000	0.400	400	20	3000	0.333	32	655
C	Radio-Frequency Power Amplifier and Oscillator	4000	0.350	400	20	3000	0.333	25	730
C	Plate-Modulated R-F Power Amplifier	3000	0.275	270	20	3000	0.245	18	550

*Two tubes.



450TH

The 450TH is a high-power general-purpose triode with a 450-watt plate-dissipation rating and is cooled by radiation and convection. It has an amplification factor of 38; it is useable at maximum ratings through 40 megacycles.

PLATE DISSIPATION 450 watts
FREQUENCY FOR MAXIMUM RATINGS 40 megacycles
COOLING Radiation and Convection

CHARACTERISTICS

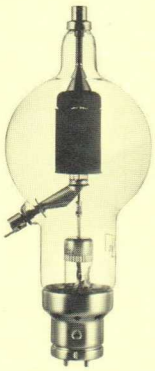
Filament: Thoriated tungsten		Base	Special 4-pin
Voltage	7.5 volts	Socket	Johnson 211 or National XM-50
Current	11.0 to 12.5 amperes	Maximum Seal Temp.	200 °C
Capacitances:		Maximum Envelope Temp.	225 °C
Grid-Filament	7.3 to 8.9 uufd	Maximum Height	12.625 inches
Grid-Plate	4.0 to 5.4 uufd	Maximum Diameter	5.125 inches
Plate-Filament	0.4 to 0.9 uufd	Net Weight	1.3 pounds

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amp)	Plate Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Plate Current (amp)	Drive Power (watts)	Output Power (watts)
AB_2	Audio-Frequency Power Amplifier and Modulator	6000	0.600	450	80	5000	0.620*	20*	2200*
C	Radio-Frequency Power Amplifier and Oscillator	6000	0.600	450	80	5000	0.450	46	1800
C	Plate-Modulated Radio-Frequency Power Amplifier	4500	0.500	300	80	4500	0.345	29	1250

*Two tubes.

TRIODES

INTERNAL ANODE



450TL

The 450TL is a high-power general-purpose triode with a 450-watt plate-dissipation rating and is cooled by radiation and convection. It has an amplification factor of 18; it is useable at maximum ratings through 40 megacycles.

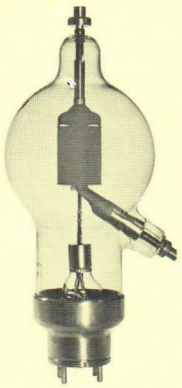
PLATE DISSIPATION 450 watts
FREQUENCY FOR MAXIMUM RATINGS 40 megacycles
COOLING Radiation and Convection

CHARACTERISTICS

Filament: Thoriated tungsten		Base	Special 4-pin
Voltage	7.5 volts	Socket	Johnson 211 or National XM-50
Current	11.0 to 12.5 amperes	Maximum Seal Temp.	200 °C
Capacitances:		Maximum Envelope Temp.	225 °C
Grid-Filament	5.6 to 7.6 uufd	Maximum Height	12.625 inches
Grid-Plate	4.2 to 5.7 uufd	Maximum Diameter	5.125 inches
Plate-Filament	0.5 to 0.8 uufd	Net Weight	1.3 pounds

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amp)	Plate Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Plate Current (amp)	Drive Power (watts)	Output Power (watts)
AB_2	Audio-Frequency Power Amplifier and Modulator	6000	0.600	450	65	5000	0.620*	28*	2200*
C	Radio-Frequency Power Amplifier and Oscillator	6000	0.600	450	65	5000	0.450	42	1800
C	Plate-Modulated Radio-Frequency Power Amplifier	4500	0.500	300	65	4500	0.345	36	1250

*Two tubes.



750TL

The 750TL is a high-power triode capable of delivering three kilowatts output power at frequencies through 40 megacycles. It is cooled by radiation and convection in the usual installation.

PLATE DISSIPATION 750 watts
FREQUENCY FOR MAXIMUM RATINGS 40 megacycles
COOLING Radiation and Convection

CHARACTERISTICS

Filament: Thoriated tungsten		Base	Special 4-pin
Voltage	7.5 volts	Socket	Johnson 124-214
Current	20.0 to 22.7 amperes	Maximum Seal Temp.	200 °C
Capacitances:		Maximum Envelope Temp.	225 °C
Grid-Filament	7.0 to 10.0 uufd	Maximum Height	17.0 inches
Grid-Plate	5.0 to 7.0 uufd	Maximum Diameter	7.125 inches
Plate-Filament	0.9 to 1.5 uufd	Net Weight	2.9 pounds

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amp)	Plate Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Plate Current (amp)	Drive Power (watts)	Output Power (watts)
AB_2	Audio-Frequency Power Amplifier and Modulator	10,000	1.0	750	100	6000	0.834*	46*	3500*
C	Radio-Frequency Power Amplifier and Oscillator	10,000	1.0	750	100	6000	0.625	125	3000
C	Plate-Modulated Radio-Frequency Power Amplifier	8000	0.8	500	100	6000	0.415	75	2000

*Two tubes.

3-1000Z

The Eimac 3-1000Z is a new zero-bias triode intended for linear amplifier applications. This tube may be used as a class-B R-F amplifier in either the grid-driven or cathode-driven connection, or two 3-1000Z's may be used in push-pull as a grid-driven class-B audio amplifier or modulator. At a plate voltage of 3000 volts, 2KW PEP input can be run with a single 3-1000Z, providing a power gain of over 20 in the cathode-driven connection.

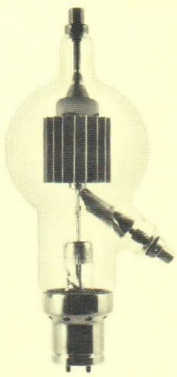
MAXIMUM PLATE DISSIPATION 1000 watts
FREQUENCY FOR MAXIMUM RATINGS 110 megacycles
COOLING Radiation and Forced Air

CHARACTERISTICS

Filament: Thoriated tungsten		Base	5-pin, Special
Voltage	7.5 volts	Socket	Eimac SK-510
Current	21.3 amperes	Maximum Base Temp.	200 °C
Capacitances (Grounded Filament):		Maximum Plate Seal Temp.	225 °C
Grid-Filament	17.0 uufd	Maximum Height	7.88 inches
Grid-Plate	6.9 uufd	Maximum Diameter	5.25 inches
Plate-Filament	0.12 uufd	Net Weight	1.2 pounds

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amps)	Plate Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
B	Audio-Frequency Power Amplifier and Modulator	3000	0.800	1000	50	3000	1.340*	42	2570*
B	Radio-Frequency Linear Power Amplifier—SSB Grounded-Grid	3000	0.800	1000	50	3000	0.670	65	1360
C	Radio-Frequency Power Amplifier and Oscillator	6000	0.700	1000	50	6000	0.700	57	3300
C	Plate-Modulated R-F Power Amplifier	4500	0.550	670	50	4500	0.500	35	1765

*Two tubes.



1000T

This high-power high-mu (35) triode enjoys a maximum plate-dissipation rating of 1000 watts; this and other maximum ratings apply through 50 megacycles. It is cooled by radiation and forced air.

PLATE DISSIPATION 1000 watts
FREQUENCY FOR MAXIMUM RATINGS 50 megacycles
COOLING Radiation and Forced Air

CHARACTERISTICS

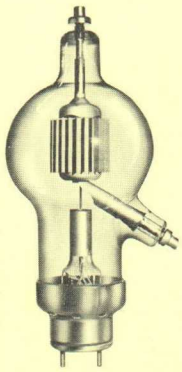
Filament: Thoriated tungsten		Base	50-watt jumbo 4-pin with air-conduction pipe
Voltage	7.5 volts	Socket	Johnson 123-211
Current	14.5 to 16.5 amperes	Maximum Seal Temp.	200 °C
Capacitances:		Maximum Envelope Temp.	225 °C
Grid-Filament	9.3 uufd	Maximum Height	12.625 inches
Grid-Plate	5.1 uufd	Maximum Diameter	5.125 inches
Plate-Filament	0.5 uufd	Net Weight	1.25 pounds

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amp)	Plate Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Plate Current (amp)	Drive Power (watts)	Output Power (watts)
AB_2	Audio-Frequency Power Amplifier and Modulator	7500	0.750	1000	80	6000	1.05*	60*	4600*
C	Radio-Frequency Power Amplifier and Oscillator	7500	0.750	1000	80	6000	0.667	60	3000
C	Plate-Modulated Radio-Frequency Power Amplifier	6000	0.600	665	80	6000	0.600	75	2935

*Two tubes.

TRIODES

INTERNAL ANODE



1500T

This 1500-watt medium-mu (24) triode is intended for use in general-purpose high-power applications at frequencies up to 40 megacycles. It is cooled by radiation and forced air.

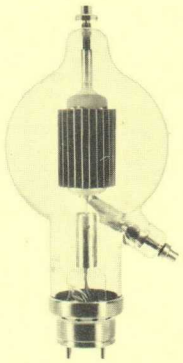
PLATE DISSIPATION 1500 watts
FREQUENCY FOR MAXIMUM RATINGS 40 megacycles
COOLING Radiation and Forced Air

CHARACTERISTICS

Filament: Thoriated tungsten		Base	Special 4-pin
Voltage	7.5 volts	Socket	Johnson 124-214
Current	22.0 to 25.0 amperes	Maximum Seal Temp.	200 °C
Capacitances:		Maximum Envelope Temp.	225 °C
Grid-Filament	7.5 to 12.5 uufd	Maximum Height	17.0 inches
Grid-Plate	5.5 to 9.0 uufd	Maximum Diameter	7.125 inches
Plate-Filament	1.1 to 2.0 uufd	Net Weight	3.0 pounds

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amps)	Plate Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
B	Audio-Frequency Power Amplifier and Modulator	8000	1.25	1500	125	6000	1.650*	115*	7000*
C	Radio-Frequency Power Amplifier and Oscillator	8000	1.25	1500	125	7000	0.860	85	4500
C	Plate-Modulated Radio-Frequency Power Amplifier	6500	1.00	1000	125	6000	0.665	70	3000

*Two tubes.



2000T

The largest internal-anode triode in the comprehensive Eimac line. The 2000T has a medium-mu (23) and is intended for high-power general-purpose service at frequencies through 40 megacycles. It is cooled by radiation and forced air.

PLATE DISSIPATION 2000 watts
FREQUENCY FOR MAXIMUM RATINGS 40 megacycles
COOLING Radiation and Forced Air

CHARACTERISTICS

Filament: Thoriated tungsten		Base	Special 4-pin
Voltage	10.0 volts	Socket	Johnson 124-214
Current	22.0 to 25.0 amperes	Maximum Seal Temp.	200 °C
Capacitances:		Maximum Envelope Temp.	225 °C
Grid-Filament	12.7 uufd	Maximum Height	17.750 inches
Grid-Plate	8.5 uufd	Maximum Diameter	8.125 inches
Plate-Filament	1.7 uufd	Net Weight	3.5 pounds

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amps)	Plate Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
AB_2	Audio-Frequency Power Amplifier and Modulator	8000	1.75	2000	150	7000	1.80*	175*	8600*
C	Radio-Frequency Power Amplifier and Oscillator	8000	1.75	2000	150	7000	1.15	115	6000
C	Plate-Modulated Radio-Frequency Power Amplifier	6000	1.40	1350	150	6000	1.13	225	5400

*Two tubes.

EXTERNAL ANODE ■ FORCED-AIR COOLED

3CX1000A7

A new addition to the Eimac line of zero-bias triodes, the 3CX1000A7 features ceramic-metal construction and a mesh thoriated-tungsten filament. Positive socketing is provided by three breechblock terminal surfaces. This tube is intended for class-B linear amplifier service in either the grid-driven or cathode-driven connection. It is equally attractive for use at audio frequencies or at radio frequencies through the TV broadcast bands. It is recommended for use in new equipment.

PLATE DISSIPATION 1000 watts
FREQUENCY FOR MAXIMUM RATINGS 220 megacycles
COOLING Forced Air

CHARACTERISTICS

Filament: Thoriated Tungsten Mesh		Base	Special, breechblock
Voltage	5.0 volts	Socket	Eimac SK-860 or SK-870
Current	34 amperes	Maximum Seal Temp.	250 °C
Capacitances (In Shielded Fixture):		Maximum Anode Core Temp.	250 °C
Grid-Filament	35 uufd	Maximum Height	4.68 inches
Grid-Plate	14 uufd	Maximum Diameter	3.36 inches
Plate-Filament	0.08 uufd	Net Weight	2.0 pounds

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amps)	Plate Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
B	Radio-Frequency Linear Power Amplifier, Grounded-Grid—SSB	2500	1.0	1000	45	2500	0.800	65	1250

3X2500A3

This popular high-power triode is widely employed in AM, FM, and TV service. Its coaxial filament and grid terminals insure low-inductance connection to these electrodes and allow operation at maximum ratings through 75 megacycles. The use of an external forced-air-cooled anode results in a compact structure with high power-handling capability.

PLATE DISSIPATION 2500 watts
FREQUENCY FOR MAXIMUM RATINGS 75 megacycles
COOLING Forced Air

CHARACTERISTICS

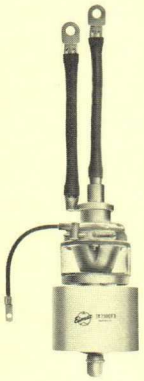
Filament: Thoriated tungsten		Base	Coaxial
Voltage	7.5 volts	Maximum Seal Temp.	175 °C
Current	49 to 54 amperes	Maximum Anode-Core Temp.	175 °C
Capacitances:		Maximum Height	8.594 inches
Grid-Filament	29.2 to 40.2 uufd	Maximum Diameter	4.156 inches
Grid-Plate	16.8 to 23.2 uufd	Net Weight	6.25 pounds
Plate-Filament	0.6 to 1.2 uufd		

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amps)	Plate Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
B	Audio-Frequency Power Amplifier and Modulator	6000	2.5	2500	150	6000	3.0*	113*	13,000*
C	Radio-Frequency Power Amplifier, and Oscillator	6000	2.5	2500	150	6000	2.08	136	10,000
C	Radio-Frequency Power Amplifier Grounded-Grid 85 to 110 mc.	4000	2.0	2500	150	4000	1.85	1900	7500
C	Plate-Modulated Radio-Frequency Power Amplifier	5000	2.0	1670	150	5000	1.25	115	5300

*Two tubes.

TRIODES

EXTERNAL ANODE ■ FORCED-AIR COOLED



3X2500F3

This compact, high-power triode has electrical characteristics identical to those of the 3X2500A3. Coaxial basing is not used, however, and special socketing is not required; conventional grid and filament leads are attached. This tube is frequently employed in industrial-heating or other radio-frequency equipments operating below 30 megacycles.

PLATE DISSIPATION 2500 watts
FREQUENCY FOR MAXIMUM RATINGS 30 megacycles
COOLING Forced Air

CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 7.5 volts
Current 49 to 54 amperes
Capacitances:
Grid-Filament 29.2 to 40.2 uufd
Grid-Plate 16.8 to 23.2 uufd
Plate-Filament 0.6 to 1.2 uufd

Maximum Seal Temp. 175 °C
Maximum Anode-Core Temp. 175 °C
Maximum Height 18.0 inches
Maximum Diameter 3.625 inches
Net Weight 7.5 pounds

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amps)	Plate Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
B	Audio-Frequency Power Amplifier and Modulator	6000	2.5	2500	150	6000	3.0*	113*	13,000*
C	Radio-Frequency Power Amplifier and Oscillator	6000	2.5	2500	150	6000	2.08	136	10,000
C	Plate-Modulated Radio-Frequency Power Amplifier	5000	2.0	1670	150	5000	1.25	115	5300

*Two tubes.

3X3000A1

This high-power compact triode was specifically designed to be used in class-AB_1 audio-amplifier service. Two tubes will typically deliver 10,000 watts output in such service. The 3X3000A1 uses coaxial electrode terminals and may be installed or removed with a minimum of delay.

PLATE DISSIPATION 3000 watts
GRID DISSIPATION 50 watts
COOLING Forced Air

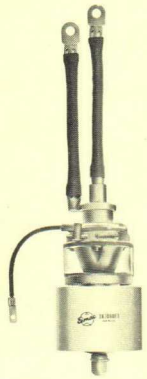
CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 7.5 volts
Current 49 to 54 amperes
Capacitances:
Grid-Filament 29 uufd
Grid-Plate 17 uufd
Plate-Filament 2.5 uufd

Base Coaxial
Maximum Seal Temp. 175 °C
Maximum Anode-Core Temp. 175 °C
Maximum Height 8.594 inches
Maximum Diameter 4.156 inches
Net Weight 6.25 pounds

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amps)	Plate Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
AB_1	Audio-Frequency Power Amplifier and Modulator	6000	2.5	3000	—	6000	2.65*	0	10,000*

*Two tubes.



3X3000F1

This low-mu high-power triode is electrically identical to the 3X3000A1. Physically, however, coaxial terminals have been replaced by heavy leads and a special socket is not needed. Typically, 10,000 watts audio may be obtained from two tubes in a class-AB_1 amplifier.

PLATE DISSIPATION 3000 watts
GRID DISSIPATION 50 watts
COOLING Forced Air

CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 7.5 volts
Current 49 to 54 amperes
Capacitances:
Grid-Filament 29 uufd
Grid-Plate 17 uufd
Plate-Filament 2.5 uufd

Maximum Seal Temp. 175 °C
Maximum Anode-Core Temp. 175 °C
Maximum Diameter 4.156 inches
Net Weight 7.5 pounds

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amps)	Plate Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
AB_1	Audio-Frequency Power Amplifier and Modulator	6000	2.5	3000	—	6000	2.65*	0	10,000*

*Two tubes.

3X3000A7

The Eimac 3X3000A7 is a new zero-bias triode intended for class-B linear amplifier applications. Operation with zero grid bias offers circuit simplicity by eliminating the bias supply. In addition, grounded-grid operation is attractive since a power gain of over twenty times can be obtained with the 3X3000A7 in the cathode-driven connection. Because of its very high mu (200), this tube is also attractive for certain pulse modulator and voltage regulator applications.

PLATE DISSIPATION 3000 watts
FREQUENCY FOR MAXIMUM RATINGS 75 megacycles
COOLING Forced Air

CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 7.5 volts
Current 51 amperes
Capacitances:
Grid-Filament 38 uufd
Grid-Plate 24 uufd
Plate-Filament 0.6 uufd

Maximum Seal Temp. 175 °C
Maximum Anode Core Temp. 175 °C
Maximum Height 8.594 inches
Maximum Diameter 4.156 inches
Net Weight 7.5 pounds

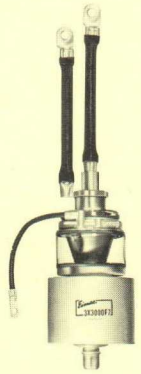
Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amps)	Plate Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
B	Audio-Frequency Power Amplifier or Modulator	5000	2.5	3000	225	4000	4.0*	120	11,000*
B	Radio-Frequency Linear Power Amplifier, Grounded-Grid—SSB	5000	2.5	3000	225	5000	1.56	215	5500
B	Radio-Frequency Linear Power Amplifier, Carrier Conditions	5000	2.5	3000	225	4000	0.815	15	1100

*Two tubes.

NEW PRODUCT

TRIODES

EXTERNAL ANODE ■ FORCED-AIR COOLED



3X3000F7

This tube is identical to the 3X3000A7 except for the addition of heavy grid and filament leads to simplify socketing problems. A pair of these tubes as audio amplifiers will deliver over 10 kilowatts output power.

PLATE DISSIPATION 3000 watts
FREQUENCY FOR MAXIMUM RATINGS 30 megacycles
COOLING Forced Air

CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 7.5 volts
Current 51 amperes
Capacitances:
Grid-Filament 38 uufd
Grid-Plate 24 uufd
Plate-Filament 0.6 uufd

Maximum Seal Temp. 175 °C
Maximum Anode Core Temp. 175 °C
Maximum Height 8.594 inches
Maximum Diameter 4.156 inches
Net Weight 7.5 pounds

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amps)	Plate Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
B	Audio-Frequency Power Amplifier or Modulator	5000	2.5	3000	225	4000	4.0*	120	11,000*
B	Radio-Frequency Linear Power Amplifier, Grounded-Grid—SSB	5000	2.5	3000	225	5000	1.56	215	5500
B	Radio-Frequency Linear Power Amplifier, Carrier Conditions	5000	2.5	3000	225	4000	0.815	15	1100

*Two tubes.

3CX10,000A1

The Eimac 3CX10,000A1 is a new ceramic-metal low-mu power triode intended for use as a linear amplifier in audio or RF applications requiring high output power with zero driving power. It features a large thoriated-tungsten filament with ample reserve emission and an integral anode cooler with the inherent ability to withstand large overloads. This tube is particularly well suited for use in audio modulators and vibration testing equipment amplifiers supplying up to 25 KW of output power (two tubes, push-pull).

PLATE DISSIPATION 12,000 watts
GRID DISSIPATION 100 watts
FREQUENCY FOR MAXIMUM RATINGS 140 megacycles
COOLING Forced Air

CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 7.5 volts
Current 94.0 to 104.0 amperes
Capacitances (Grounded Filament):
Grid-Filament 45.0 to 57.0 uufd
Grid-Plate 25.0 to 32.0 uufd
Plate-Filament 3.4 to 4.2 uufd

Base Coaxial
Socket Eimac SK-1300
Maximum Seal Temp. 250 °C
Maximum Anode-Core Temp. 250 °C
Maximum Height 8.50 inches
Maximum Diameter 7.00 inches
Net Weight 12 pounds

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amps)	Plate Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
AB_1	Audio-Frequency Power Amplifier or Modulator	7000	5.0	12,000	100	7000	7.40*	0	29,100*
C	Radio-Frequency Industrial Oscillator	5000	4.0	10,000	100	5000	2.75	—	11,000
A	Voltage Regulator Service	7000	**	12,000	100	0-5000	**	0	—

*Two tubes. **Up to 5 amperes depending on voltage drop across tube.

3CX10,000A3

Here is a new ceramic-metal medium-mu triode designed for industrial-heating oscillator service. It features a large thoriated-tungsten filament with ample reserve emission and an integral anode cooler with the inherent ability to withstand large overloads. It is intended for use through 140 megacycles, also as a grounded-grid FM amplifier developing 20 kilowatts useful output power.

PLATE DISSIPATION 12,000 watts
GRID DISSIPATION 250 watts
FREQUENCY FOR MAXIMUM RATINGS 140 megacycles
COOLING Forced Air

CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 7.5 volts
Current 94 to 104 amperes
Capacitances (Grounded Filament):
Grid-Filament 48.0 to 58.0 uufd
Grid-Plate 30.0 to 38.0 uufd
Plate-Filament 1.20 to 1.50 uufd

Base Coaxial
Socket Eimac SK-1300
Maximum Seal Temp. 250 °C
Maximum Anode-Core Temp. 250 °C
Maximum Height 8.50 inches
Maximum Diameter 7.00 inches
Net Weight 12 pounds

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amps)	Plate Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	Radio-Frequency Industrial Oscillator	7000	4.0	10,000	250	7000	4.0	—	22,400
AB_2	Radio-Frequency Linear Power Amplifier—SSB, Grounded-Grid	7000	5.0	12,000	250	7000	4.0	2050	20,000
C	Radio-Frequency Power Amplifier, Grounded-Grid	7000	4.0	10,000	250	7000	4.0	4100	24,500
C	Plate-Modulated R-F Power Amplifier	5500	3.0	6500	250	5000	3.0	515	12,400

3CX10,000A7

The new Eimac 3CX10,000A7 is a ceramic-metal zero-bias triode intended for use in grounded-grid linear amplifiers delivering 20 kilowatts of useful output power. Because of its low intermodulation distortion characteristics the 3CX10,000A7 is particularly well suited for single-sideband amplifiers. Two tubes operating in a push-pull audio amplifier under class-B zero-bias conditions will deliver up to 45 kilowatts of useful output power.

MAXIMUM PLATE DISSIPATION 12,000 watts
GRID DISSIPATION 500 watts
FREQUENCY FOR MAXIMUM RATINGS 140 megacycles
COOLING Forced Air

CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 7.5 volts
Current 94.0 to 104.0 amperes
Capacitances (Grounded Filament):
Grid-Filament 63 uufd
Grid-Plate 41 uufd
Plate-Filament 0.05 uufd

Base Coaxial
Socket Eimac SK-1300
Maximum Seal Temp. 250 °C
Maximum Anode Core Temp. 250 °C
Maximum Height 8.5 inches
Maximum Diameter 7.0 inches
Net Weight 12 pounds

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amps)	Plate Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
B	Audio-Frequency Power Amplifier or Modulator	7000	5.0	12,000	500	7000	10.0*	560*	47,700*
B	Radio-Frequency Linear Power Amplifier, Grounded-Grid—SSB	7000	5.0	12,000	500	7000	5.0	1540	24,200
C	Radio-Frequency Power Amplifier or Oscillator	7000	4.0	10,000	500	7000	4.0	430	21,300
C	Plate-Modulated R-F Power Amplifier	5500	3.0	6500	500	5000	3.0	380	11,900

*Two tubes.

TRIODES

EXTERNAL ANODE ■ WATER COOLED

3W5000A1

The 3W5000A1 is a water-cooled version of the 3X3000A1 and is useful in audio service when reserve anode dissipation is needed or when water is easily employed as a coolant. It has coaxial terminals which allow rapid tube installation or removal if quick-disconnect water fittings are also employed.

PLATE DISSIPATION 5000 watts
GRID DISSIPATION 50 watts
COOLING Water and Forced Air

CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 7.5 volts
Current 49 to 54 amperes
Capacitances:
Grid-Filament 29 uufd
Grid-Plate 17 uufd
Plate-Filament 2.5 uufd

Base Coaxial
Maximum Seal Temp. 175 °C
Maximum Height 12.562 inches
Maximum Diameter 3.625 inches
Net Weight 3.5 pounds

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amps)	Plate Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
AB_1	Audio-Frequency Power Amplifier and Modulator	6000	2.5	5000	—	6000	2.65*	0	10,000*

*Two tubes.

3W5000F1

The 3W5000F1 is a water-cooled version of the 3X3000F1. Conventional grid and filament leads allow installation without special socketing. It is designed for use in audio-amplifier applications where plate dissipation may be as high as 5000 watts or for similar service when water cooling is preferred.

PLATE DISSIPATION 5000 watts
GRID DISSIPATION 50 watts
COOLING Water and Forced Air

CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 7.5 volts
Current 49 to 54 amperes
Capacitances:
Grid-Filament 29 uufd
Grid-Plate 17 uufd
Plate-Filament 2.5 uufd

Maximum Seal Temp. 175 °C
Maximum Diameter 3.625 inches
Net Weight 4.8 pounds

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amps)	Plate Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
AB_1	Audio-Frequency Power Amplifier and Modulator	6000	2.5	5000	—	6000	2.65*	0	10,000*

*Two tubes.

3W5000A3

This water-cooled version of the 3X2500A3 is for use in equipments where water is the preferred cooling medium or where additional plate-dissipation capability is required. It, too, is coaxial based and may be employed at maximum ratings through 75 megacycles.

PLATE DISSIPATION 5000 watts
FREQUENCY FOR MAXIMUM RATINGS 75 megacycles
COOLING Water and Forced Air

CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 7.5 volts
Current 49 to 54 amperes
Capacitances:
Grid-Filament 36 uufd
Grid-Plate 20 uufd
Plate-Filament 1.2 uufd

Base Coaxial
Maximum Seal Temp. 175 °C
Maximum Height 12.562 inches
Maximum Diameter 3.625 inches
Net Weight 3.5 pounds

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amps)	Plate Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
AB_2	Audio-Frequency Power Amplifier and Modulator	6000	2.5	5000	150	5000	2.26*	59*	8000*
B	Audio-Frequency Power Amplifier and Modulator	6000	2.5	5000	150	6000	3.0*	113*	13,000*
C	Radio-Frequency Power Amplifier and Oscillator	6000	2.5	5000	150	6000	2.08	136	10,000
C	Plate-Modulated Radio-Frequency Power Amplifier	5000	2.0	3350	150	5000	1.45	76	5580

*Two tubes.

3W5000F3

The 3W5000F3 is electrically identical to the 3X2500F3 except for plate-dissipation rating. Its water-cooled anode with 5000-watt capability makes it an ideal choice for equipments where high power must be dissipated or where it is more convenient to cool with water than forced air. Conventional grid and filament leads allow installation without special socketing.

PLATE DISSIPATION 5000 watts
FREQUENCY FOR MAXIMUM RATINGS 30 megacycles
COOLING Water and Forced Air

CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 7.5 volts
Current 49 to 54 amperes
Capacitances:
Grid-Filament 36 uufd
Grid-Plate 21 uufd
Plate-Filament 1.2 uufd

Maximum Seal Temp. 175 °C
Maximum Height 22.0 inches
Maximum Diameter 3.625 inches
Net Weight 4.8 pounds

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amps)	Plate Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
AB_2	Audio-Frequency Power Amplifier and Modulator	6000	2.5	5000	150	5000	2.26*	59*	8000*
B	Audio-Frequency Power Amplifier and Modulator	6000	2.5	5000	150	6000	3.0*	113*	13,000*
C	Radio-Frequency Power Amplifier and Oscillator	6000	2.5	5000	150	6000	2.08	136	10,000
C	Plate-Modulated Radio-Frequency Power Amplifier	5000	2.0	3350	150	5000	1.45	76	5580

*Two tubes.

TRIODES

EXTERNAL ANODE ■ WATER COOLED

3CW20,000A1

The Eimac 3CW20,000A1 is a new ceramic-metal low-mu power triode intended for use as a linear amplifier in audio or rf applications requiring high output power with zero driving power. It features a large thoriated-tungsten filament with ample reserve emission and an integral anode cooler with the inherent ability to withstand large overloads. This tube is particularly well suited for use in audio modulators and vibration testing equipment amplifiers supplying up to 25 kW of output power (two tubes, push-pull).

PLATE DISSIPATION 20,000 watts
GRID DISSIPATION 100 watts
FREQUENCY FOR MAXIMUM RATINGS 140 megacycles
COOLING Water and Forced Air

CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 7.5 volts
Current 94.0 to 104.0 amperes
Capacitances (Grounded Filament):
Grid-Filament 45.0 to 57.0 uufd
Grid-Plate 25.0 to 32.0 uufd
Plate-Filament 3.4 to 4.2 uufd

Base Coaxial
Socket Eimac SK-1300
Maximum Seal Temp. 250 °C
Maximum Anode-Core Temp. 250 °C
Maximum Height 8.50 inches
Maximum Diameter 7.00 inches
Net Weight 12 pounds

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amps)	Plate Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
AB_1	Audio-Frequency Power Amplifier or Modulator	7000	5.0	12,000	100	7000	7.40*	0	29,100*
C	Radio-Frequency Industrial Oscillator	5000	4.0	10,000	100	5000	2.75	—	11,000
A	Voltage Regulator Service	7000	**	12,000	100	0-5000	**	0	—

*Two tubes. **Up to 5 amperes depending on voltage drop across tube.

3CW20,000A3

Here is a new ceramic-metal medium-mu triode designed for industrial-heating oscillator service. It features a large thoriated-tungsten filament with ample reserve emission and an integral anode cooler with the inherent ability to withstand large overloads. It is intended for use through 140 megacycles, also as a grounded-grid FM amplifier developing 20 kilowatts useful output power.

PLATE DISSIPATION 20,000 watts
GRID DISSIPATION 250 watts
FREQUENCY FOR MAXIMUM RATINGS 140 megacycles
COOLING Water and Forced Air

CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 7.5 volts
Current 94 to 104 amperes
Capacitances (Grounded Filament):
Grid-Filament 48.0 to 58.0 uufd
Grid-Plate 30.0 to 38.0 uufd
Plate-Filament 1.20 to 1.50 uufd

Base Coaxial
Socket Eimac SK-1300
Maximum Seal Temp. 250 °C
Maximum Anode-Core Temp. 250 °C
Maximum Height 8.50 inches
Maximum Diameter 7.00 inches
Net Weight 12 pounds

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amps)	Plate Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	Radio-Frequency Industrial Oscillator	7000	4.0	10,000	250	7000	4.0	—	22,400
AB_2	Radio-Frequency Linear Power Amplifier—SSB, Grounded-Grid	7000	5.0	12,000	250	7000	4.0	2050	20,000
C	Radio-Frequency Power Amplifier, Grounded-Grid	7000	4.0	10,000	250	7000	4.0	4100	24,500
C	Plate-Modulated RF Power Amplifier	5500	3.0	6500	250	5000	3.0	515	12,400

3CW20,000A7

The new Eimac 3CW20,000A7 is a ceramic-metal zero-bias triode intended for use in grounded-grid linear amplifiers delivering 20 kilowatts of useful output power. Because of its low intermodulation distortion characteristics the 3CW20,000A7 is particularly well suited for single-sideband amplifiers. Two tubes operating in a push-pull audio amplifier under class-B zero-bias conditions will deliver up to 45 kilowatts of useful output power.

MAXIMUM PLATE DISSIPATION 20,000 watts
GRID DISSIPATION 500 watts
FREQUENCY FOR MAXIMUM RATINGS 140 megacycles
COOLING Water and Forced Air

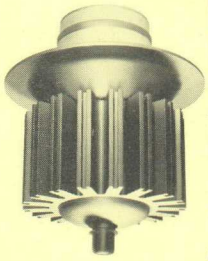
CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 7.5 volts
Current 94.0 to 104.0 amperes
Capacitances (Grounded Filament):
Grid-Filament 63 uufd
Grid-Plate 41 uufd
Plate-Filament 0.05 uufd

Base Coaxial
Socket Eimac SK-1300
Maximum Seal Temp. 250 °C
Maximum Anode Core Temp. 250 °C
Maximum Height 8.5 inches
Maximum Diameter 7.0 inches
Net Weight 12 pounds

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amps)	Plate Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
B	Audio-Frequency Power Amplifier or Modulator	7000	5.0	12,000	500	7000	10.0	560	47,700
B	Radio-Frequency Linear Power Amplifier, Grounded-Grid—SSB	7000	5.0	12,000	500	7000	5.0	1540	24,200
B	Radio-Frequency Linear Power Amplifier, Carrier Conditions, Grounded-Grid	7000	5.0	12,000	500	7000	2.4	330	5650
C	Radio-Frequency Power Amplifier or Oscillator	7000	4.0	10,000	500	7000	4.0	430	21,300
C	Plate-Modulated RF Power Amplifier	5500	3.0	6500	500	5000	3.0	380	11,900

EXTERNAL ANODE ■ VAPOR COOLED



3CV30,000A3

A vapor-cooled triode with a heavy, one kilowatt filament and 30 kW anode dissipation capability. It is highly recommended for heavy duty applications such as industrial, rf heating service. A complete line of accessories is available including boiler, condenser, etc. for simplified systems installation.

PLATE DISSIPATION 30,000 watts
FREQUENCY FOR MAXIMUM RATING 140 megacycles
COOLING Vapor and Forced Air

CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 6.3 volts
Current 158 amperes
Capacitances (Grounded Filament):
Grid-Filament 48.0 to 58.0 uufd
Grid-Plate 30.0 to 38.0 uufd
Plate-Filament 1.2 to 1.5 uufd

Base Coaxial
Socket Eimac SK-1310
Maximum Seal Temp. 250 °C
Maximum Anode-Core Temp. 250 °C
Maximum Height 8.75 inches
Maximum Diameter 7.75 inches
Net Weight 22 pounds

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amps)	Plate Diss. (watts)	Grid Current (amps)	Typical Operation: Plate Voltage (volts)	Plate Current (amps)	Plate Diss. (watts)	Output Power (watts)
C	Radio-Frequency Industrial Oscillator	10,000	6.0	30,000	1.0	10,000	6.0	18,000	42,000

NEW PRODUCT

TETRODES

INTERNAL ANODE

4-65A/8165

A general-purpose radial-beam power tetrode, the 4-65A is cooled by radiation and convection and may be used without forced air in most installations. Maximum ratings extend to 150 megacycles.

PLATE DISSIPATION 65 watts
FREQUENCY FOR MAXIMUM RATINGS 150 megacycles
COOLING Convection and Radiation

CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 6.0 volts
Current 3.2 to 3.8 amperes
Capacitances (Grounded Filament):
Input 6.0 to 8.3 uufd
Output 1.9 to 2.6 uufd
Feed-Through 0.12 uufd

Base 5-pin
Socket National HX29 or Johnson 122-101
Max. Seal Temp. 200 °C.
Max. Envelope Temp. 225 °C.
Max. Height 4.38 inches
Max. Diameter 2.38 inches
Net Weight 3 ounces

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amp)	Plate Diss. (watts)	Screen Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amp)	Drive Power (watts)	Output Power (watts)
AB_1	Audio-Frequency Power Amplifier and Modulator	3000	0.150	65	10	—	1750	500	0.170*	0	175*
AB_1	Radio-Frequency Linear Power Amplifier—SSB	3000	0.150	65	10	—	3000	360	0.065	0	130
AB_2	Audio-Frequency Power Amplifier and Modulator	3000	0.150	65	10	5	1800	250	0.220*	1.3*	270*
C	Radio-Frequency Power Amplifier and Oscillator	3000	0.150	65	10	5	3000	250	0.115	1.7	280
C	Plate-Modulated R-F Power Amplifier	2500	0.120	45	10	5	2500	250	0.110	2.6	230

*Two Tubes.

4D21/4-125A

This 125-watt general-purpose power tetrode is usable at maximum ratings to 120 megacycles. Its low interelectrode capacitances make it ideal for r-f amplifier service but it is equally useful in audio applications.

PLATE DISSIPATION 125 watts
FREQUENCY FOR MAXIMUM RATINGS 120 megacycles
COOLING Radiation and Forced Air

CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 5.0 volts
Current 6.0 to 7.0 amperes
Capacitances (Grounded Filament):
Input 9.2 to 12.4 uufd
Output 2.5 to 3.5 uufd
Feed-Through 0.07 uufd

Base 5-pin metal shell
Socket National HX100 or Johnson 122-275
Max. Base-Seal Temp. 170 °C.
Max. Envelope Temp. 225 °C.
Max. Height 5.69 inches
Max. Diameter 2.81 inches
Net Weight 6.5 ounces

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amp)	Plate Diss. (watts)	Screen Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amp)	Drive Power (watts)	Output Power (watts)
AB_1	Audio-Frequency Power Amplifier and Modulator	3000	0.225	125	20	—	2500	600	0.232*	0	330*
AB_1	Radio-Frequency Linear Power Amplifier—SSB	3000	0.225	125	20	—	3000	510	0.105	0	200
AB_2	Audio-Frequency Power Amplifier and Modulator	3000	0.225	125	20	5	2500	350	0.260*	1*	400*
C	Radio-Frequency Power Amplifier and Oscillator	3000	0.225	125	20	5	3000	350	0.167	2.5	375
C	Plate-Modulated R-F Power Amplifier	2500	0.200	85	20	5	2500	350	0.152	3.3	300

*Two Tubes.

5D22/4-250A

The Eimac 4-250A enjoys a 250-watt plate dissipation rating and is usable at maximum ratings through the FM broadcast band. Its low interelectrode capacitances make it an ideal choice for high-frequency applications but it is often used in audio-amplifier work as well.

PLATE DISSIPATION 250 watts
FREQUENCY FOR MAXIMUM RATINGS 110 megacycles
COOLING Radiation and Forced Air

CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 5.0 volts
Current 13.5 to 14.7 amperes
Capacitances (Grounded Filament):
Input 10.7 to 14.5 uufd
Output 3.7 to 5.1 uufd
Feed-Through 0.14 uufd

Base 5-pin metal shell
Socket Eimac SK-400
Max. Seal Temp. 200 °C.
Max. Envelope Temp. 225 °C.
Max. Height 6.38 inches
Max. Diameter 3.56 inches
Net Weight 8 ounces

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amp)	Plate Diss. (watts)	Screen Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amp)	Drive Power (watts)	Output Power (watts)
AB_1	Audio-Frequency Power Amplifier and Modulator	4000	0.350	250	35	—	3000	600	0.417*	0	750*
AB_1	Radio-Frequency Linear Power Amplifier—SSB	4000	0.350	250	35	—	4000	510	0.165	0	450
AB_2	Audio-Frequency Power Amplifier and Modulator	4000	0.350	250	35	10	3000	300	0.473*	1.9*	1040*
C	Radio-Frequency Power Amplifier and Oscillator	4000	0.350	250	35	10	4000	500	0.312	2.46	1000
C	Plate-Modulated R-F Power Amplifier	3200	0.275	165	35	10	3000	400	0.225	3.2	510

*Two Tubes.

4-400A/8438

A 400-watt general-purpose radial-beam tetrode, the 4-400A is ideal for any r-f application below 110 megacycles. Its ratings allow an input power of up to 1400 watts in such service or in others where lower radio frequencies or audio frequencies are to be amplified.

PLATE DISSIPATION 400 watts
FREQUENCY FOR MAXIMUM RATINGS 110 megacycles
COOLING Radiation and Forced Air

CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 5.0 volts
Current 13.5 to 14.7 amperes
Capacitances (Grounded Filament):
Input 10.7 to 14.5 uufd
Output 4.2 to 6.6 uufd
Feed-Through 0.17 uufd

Base 5-pin metal shell
Socket Eimac SK-400
Max. Seal Temp. 200 °C.
Max. Envelope Temp. 225 °C.
Max. Height 6.38 inches
Max. Diameter 3.56 inches
Net Weight 9 ounces

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amp)	Plate Diss. (watts)	Screen Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amp)	Drive Power (watts)	Output Power (watts)
AB_1	Audio-Frequency Power Amplifier and Modulator	4000	0.350	400	35	—	4000	750	0.585*	0	1540*
AB_1	Radio-Frequency Linear Power Amplifier—SSB	4000	0.350	400	35	—	4000	705	0.250	0	650
AB_2	Audio-Frequency Power Amplifier and Modulator	4000	0.350	400	35	10	4000	500	0.638*	3.5*	1750*
C	Radio-Frequency Power Amplifier and Oscillator	4000	0.350	400	35	10	4000	500	0.350	5.8	1100
C	Plate-Modulated R-F Power Amplifier	3200	0.275	270	35	10	3000	500	0.275	3.5	630

*Two Tubes.

4-1000A/8166

This high-power general-purpose tetrode is capable of dissipating 1000 watts from its radiation-cooled anode. Maximum ratings apply through the FM broadcast band but its low drive-power requirements make it an ideal choice for audio and low-frequency applications as well.

PLATE DISSIPATION 1000 watts
FREQUENCY FOR MAXIMUM RATINGS 110 megacycles
COOLING Radiation and Forced Air

CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 7.5 volts
Current 20.0 to 22.7 amperes
Capacitances (Grounded Filament):
Input 23.8 to 32.4 uufd
Output 6.8 to 9.4 uufd
Feed-Through 0.35 uufd

Base 5-pin metal shell
Socket Eimac SK-500
Max. Base-Seal Temp. 150 °C.
Max. Envelope Temp. 225 °C.
Max. Height 9.63 inches
Max. Diameter 5.25 inches
Net Weight 1.5 pounds

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amp)	Plate Diss. (watts)	Screen Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amp)	Drive Power (watts)	Output Power (watts)
AB_1	Audio-Frequency Power Amplifier and Modulator	6000	0.700	1000	75	—	6000	1000	0.950*	0	3840*
AB_1	Radio-Frequency Linear Power Amplifier—SSB	6000	0.700	1000	75	—	6000	1000	0.475	0	1920
AB_2	Audio-Frequency Power Amplifier and Modulator	6000	0.700	1000	75	25	6000	500	0.950*	4.7*	3900*
C	Radio-Frequency Power Amplifier and Oscillator	6000	0.700	1000	75	25	6000	500	0.700	15	3400
C	Plate-Modulated R-F Power Amplifier	5000	0.600	670	75	25	5500**	500	0.600	9	2630

**Below 30 mc. *Two Tubes.

TETRODES

EXTERNAL ANODE ■ CONDUCTION COOLED

4CN15A

A special version of the popular 4CX300A intended for use in low-duty pulse applications or where size and weight are important. The 4CN15A carries a nominal plate-dissipation rating of 15 watts but this may be extended by employing liquid immersion or another suitable heat sink. Its rugged design makes it ideal for applications where shock and/or vibration are encountered.

PLATE DISSIPATION 15 watts
FREQUENCY FOR MAXIMUM RATINGS 500 megacycles
COOLING Convection or Conduction

CHARACTERISTICS

Cathode: Oxide-coated, unipotential
Heater:
Voltage 6.0 volts
Current 2.2 to 3.2 amperes
Capacitances (Grounded Cathode):
Input 25 to 33 uufd
Output 3.5 to 4.5 uufd
Feed-Through 0.06 uufd

Base Special, breechblock
Socket Eimac SK-700 series
Maximum Seal Temp. 250 °C
Max. Anode-Core Temp. 250 °C
Max. Height 2.5 inches
Max. Diameter 0.894 inches
Net Weight 2.5 ounces

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amp)	Plate Diss. (watts)	Screen Diss. (watts)	Grid Diss. (watts)	Typical Operation
C	Radio-Frequency Power Amplifier or Oscillator	2000	0.250	15*	12	2	Values dependent upon allowable plate dissipation
C	Plate-Modulated Radio Frequency Amplifier	1500	0.200	9.5*	12	2	
AB_1	Radio-Frequency Linear Power Amplifier—SSB	** 2500	0.250	15*	12	2	(determined by heat sink).

**Below 250 Mc. *May be increased by conduction cooling.

Y-210

A special version of the ceramic and metal 4CX250B intended for use where small size and light weight are important. It may be cooled by liquid immersion or by the use of a suitable heat sink; maximum allowable plate dissipation is determined by the adequacy of the cooling provided but in no case should it exceed 250 watts.

FREQUENCY FOR MAXIMUM RATINGS 500 megacycles
COOLING Heat Sink

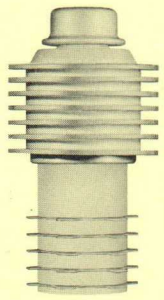
CHARACTERISTICS

Cathode: Oxide-coated, unipotential
Heater:
Voltage 6.0 volts
Current 2.3 to 2.9 amperes
Capacitances (Grounded Cathode):
Input 14.2 to 17.2 uufd
Output 4.0 to 5.0 uufd
Feed-Through 0.06 uufd

Base 9-pin special
Socket Eimac SK-600 series
Max. Seal Temp. 250 °C
Max. Anode-Core Temp. 250 °C
Max. Height 2.46 inches
Max. Diameter 1.64 inches
Net Weight 3 ounces

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amp)	Screen Diss. (watts)	Grid Diss. (watts)
AB_1	Radio-Frequency Linear Power Amplifier—SSB	2000	0.250	12	2
C	Radio-Frequency Power Amplifier and Oscillator	2000	0.250	12	2

EXTERNAL ANODE ■ FORCED-AIR COOLED



4CX125C and 4CX125F

The 4CX125C is a horizontally-finned version of the 4CX300A and is intended for use where transverse air cooling is desired. It is also useful where anode power is dissipated by liquid immersion. Its electrical characteristics are identical to those of the 4CX3000A with the exception of plate dissipation which is established at 125 watts with air cooling. It is ideally suited for applications where shock and/or vibration are experienced. The 4CX125F is an identical tube with a 26.5 volt heater.

PLATE DISSIPATION 125 watts
FREQUENCY FOR MAXIMUM RATINGS 500 megacycles
COOLING Forced Air

CHARACTERISTICS

Cathode: Oxide-coated, unipotential
Heater: **4CX125C** **4CX125F**
Voltage 6.0 2.65 volts
Current 2.2 to 3.1 .59 to .70 amps
Capacitances (Grounded Cathode):
Input 25 to 33 uufd
Output 3.5 to 4.5 uufd
Feed-Through 0.06 uufd

Base Special, breechblock
Socket Eimac SK-700 series
Max. Seal Temp. 250 °C
Max. Anode-Core Temp. 250 °C
Max. Height 2.50 inches
Max. Diameter 1.25 inches
Net Weight 3.5 ounces

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amp)	Plate Diss. (watts)	Screen Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amp)	Drive Power (watts)	Output Power (watts)
C	Radio-Frequency Power Amplifier and Oscillator	2000	0.250	125	12	2	2000	250	0.250	2.9	390
C	Plate-Modulated RF Power Amplifier	1500	0.200	80	12	2	1500	250	0.200	1.7	235

4X150A/7034 and 4X150D/7035

The veteran of external-anode tetrodes, and an Eimac original, continues to enjoy its deserved popularity. Recent tube improvements have made possible increases in maximum plate-voltage and plate-dissipation ratings. In Class-AB or Class-C service an input power of 500 watts is now allowed at frequencies up to 150 megacycles. The 4X150D is a 26.5 volt heater version of the 4X150A.

PLATE DISSIPATION 250 watts
FREQUENCY FOR MAXIMUM RATINGS 150 megacycles
COOLING Forced Air

CHARACTERISTICS

Cathode: Oxide-coated, unipotential
Heater: **4X150A** **4X150D**
Voltage 6.0 26.5 volts
Current 2.3 to 2.9 0.50 to 0.62 amps
Capacitances (Grounded Cathode):
Input 14.5 to 17.0 uufd
Output 4.0 to 4.8 uufd
Feed-Through 0.05 uufd

Base 9-pin, special
Socket Eimac SK-600 series
Max. Base-Seal Temp. 175 °C
Max. Anode-Core Temp. 250 °C
Max. Height 2.404 inches
Max. Diameter 1.640 inches
Net Weight 4 ounces

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amp)	Plate Diss. (watts)	Screen Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amp)	Drive Power (watts)	Output Power (watts)
AB_1	Audio-Frequency Power Amplifier and Modulator	2000	0.250	250	12	—	2000	350	0.500*	0	600*
AB_1	Radio-Frequency Linear Power Amplifier—SSB	2000	0.250	250	12	—	2000	350	0.250	0	300
C	Radio-Frequency Power Amplifier and Oscillator	2000	0.250	250	12	2	2000	250	0.250	2.9	390
C	Plate-Modulated RF Power Amplifier	1600	0.200	165	12	2	1500	250	0.200	1.7	235

*Two tubes.

NEW PRODUCT

TETRODES

EXTERNAL ANODE ■ FORCED-AIR COOLED

4X150G

One of the forerunners in external-anode coaxial-based tetrodes, the 4X150G continues to deliver long life and high reliability in VHF and UHF applications. It is intended for use in CW service at frequencies up to 1200 megacycles and is useful in pulse service at frequencies up to 1500 megacycles.

PLATE DISSIPATION 250 watts
FREQUENCY FOR MAXIMUM RATINGS
500 megacycles CW
1500 megacycles Pulsed
COOLING Forced Air

CHARACTERISTICS

Cathode: Oxide-coated, unipotential
Heater:
Voltage 2.5 volts
Current 6.2 to 7.3 amperes
Capacitances (Grounded Cathode):
Input 25.0 to 29.0 uufd
Output 4.0 to 4.9 uufd
Feed-Through 0.05 uufd

Base Coaxial
Max. Seal & Anode-Core Temp. 175 °C
Max. Height 2.750 inches
Max. Diameter 1.635 inches
Net Weight 6 ounces

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amps)	Plate Diss. (watts)	Screen Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
B_{TV}	Radio-Frequency Linear Amplifier — TV Visual Service	1250	0.250	250	12	2	1250	300	0.305*	9	250*
C	Plate-Pulsed RF Power Amplifier and Oscillator	7000 pulse	**	250	12	2	7000 pulse	1000	6.0	1200 Mc. Osc.	17,000

*Peak synchronizing level.
**Maximum pulse cathode current, 7 amperes; maximum pulse duration, 5 microseconds.

4X150R/8296 and 4X150S/8297

This new addition to the Eimac tetrode line is a ruggedized version of the famous 4X150A. It incorporates construction features found in the 4CX300A and 4CX250R resulting in a tube capable of operating at full voltages in environments where moderate shock and vibration are present. The 4X150R will replace the 4X150A in nearly all applications since it is electrically identical except for a small (1.75 uufd) increase in input-capacitance limits, in feed-through capacitance (0.01 uufd) and in heater current (0.1 ampere). The 4X150S is identical but incorporates a 26.5 volt heater for mobile or airborne applications.

PLATE DISSIPATION 250 watts
FREQUENCY FOR MAXIMUM RATINGS 150 megacycles
COOLING Forced Air

CHARACTERISTICS

Cathode: Oxide-coated, unipotential
Heater: **4X150R** **4X150S**
Voltage 6.0 26.5 volts
Current 2.4 to 3.0 0.56 to 0.68 amps
Capacitances (Grounded Cathode):
Input 16.25 to 18.75 uufd
Output 4.0 to 4.8 uufd
Feed-Through 0.06 uufd

Base 9-pin, special
Socket Eimac SK-600 series
Max. Base Seal Temp. 175 °C
Max. Anode Core Temp. 250 °C
Max. Height 2.404 inches
Max. Diameter 1.640 inches
Net Weight 4 ounces

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amp)	Plate Diss. (watts)	Screen Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amp)	Drive Power (watts)	Output Power (watts)
AB_1	Audio-Frequency Power Amplifier and Modulator	2000	0.250	250	12	—	2000	350	0.500*	0	600*
AB_1	Radio-Frequency Linear Power Amplifier—SSB	2000	0.250	250	12	—	2000	350	0.250	0	300
C	Radio-Frequency Power Amplifier and Oscillator	2000	0.250	250	12	2	2000	250	0.250	2.9	390
C	Plate-Modulated RF Power Amplifier	1600	0.200	165	12	2	1500	250	0.200	1.7	235

*Two tubes.

4X250B and 4X250F

This 250-watt general purpose external-anode tetrode is useful in many different applications where compactness and light weight are desirable features. It is equally suitable for audio-frequency, radio-frequency, or pulse service. Its maximum ratings allow an input power of 500 watts at frequencies up to 500 megacycles. The 26.5 volt heater is incorporated in this tube when it is designated the 4X250F.

PLATE DISSIPATION 250 watts
FREQUENCY FOR MAXIMUM RATINGS 500 megacycles
COOLING Forced Air

CHARACTERISTICS

Cathode: Oxide-coated, unipotential
Heater: **4X250B** **4X250F**
Voltage 6.0 26.5 volts
Current 2.3 to 2.9 0.5 to 0.62 amps
Capacitances (Grounded Cathode):
Input 14.2 to 17.2 uufd
Output 4.0 to 5.0 uufd
Feed-Through 0.06 uufd

Base 9-pin, special
Socket Eimac SK-600 series
Max. Base-Seal Temp. 250 °C
Max. Anode-Core Temp. 250 °C
Max. Height 2.464 inches
Max. Diameter 1.640 inches
Net Weight 4 ounces

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amp)	Plate Diss. (watts)	Screen Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amp)	Drive Power (watts)	Output Power (watts)
AB_1	Audio-Frequency Power Amplifier and Modulator	2000	0.250	250	12	—	2000	350	0.500*	0	600*
AB_1	Radio-Frequency Linear Power Amplifier—SSB	2000	0.250	250	12	—	2000	350	0.250	0	300
C	Radio-Frequency Power Amplifier and Oscillator	2000	0.250	250	12	2	2000	250	0.250	2.9	390
C	Plate-Modulated RF Power Amplifier	1500	0.200	165	12	2	1500	250	0.200	1.7	235

*Two tubes.

4CX250B/7203 and 4CX250F/7204

A 250-watt general purpose external-anode tetrode featuring ceramic-metal construction. This compact power tube can be used at maximum ratings at frequencies up to 500 megacycles. It is recommended for use in equipments of new design. The 4CX250F is identical in all respects except for a heater rated at 26.5 volts.

PLATE DISSIPATION 250 watts
FREQUENCY FOR MAXIMUM RATINGS 500 megacycles
COOLING Forced Air

CHARACTERISTICS

Cathode: Oxide-coated, unipotential
Heater: **4CX250B** **4CX250F**
Voltage 6.0 26.5 volts
Current 2.3 to 2.9 0.5 to 0.62 amps
Capacitances (Grounded Cathode):
Input 14.2 to 17.2 uufd
Output 4.0 to 5.0 uufd
Feed-Through 0.06 uufd

Base 9-pin, special
Socket Eimac SK-600 series
Max. Seal Temp. 250 °C
Max. Anode-Core Temp. 250 °C
Max. Height 2.464 inches
Max. Diameter 1.640 inches
Net Weight 4 ounces

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amp)	Plate Diss. (watts)	Screen Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amp)	Drive Power (watts)	Output Power (watts)
AB_1	Audio-Frequency Power Amplifier and Modulator	2000	0.250	250	12	—	2000	350	0.500*	0	600*
AB_1	Radio-Frequency Linear Power Amplifier—SSB	2000	0.250	250	12	—	2000	350	0.250	0	300
C	Radio-Frequency Power Amplifier and Oscillator	2000	0.250	250	12	2	2000	250	0.250	2.9	390
C	Plate-Modulated RF Power Amplifier	1500	0.200	165	12	2	1500	250	0.200	1.7	235

*Two tubes.

TETRODES

EXTERNAL ANODE ■ FORCED-AIR COOLED

7580

This Eimac ceramic and metal tetrode has high-gain characteristics which make it particularly suitable for class-AB_1 radio-frequency or audio-frequency service; of course, it is also an excellent power tetrode for class-C service. Maximum ratings apply at frequencies up to 500 megacycles.

PLATE DISSIPATION 250 watts
FREQUENCY FOR MAXIMUM RATINGS 500 megacycles
COOLING Forced Air

CHARACTERISTICS

Cathode: Oxide-coated, unipotential
Heater:
Voltage 6.0 volts
Current 2.3 to 2.9 amperes
Capacitances (Grounded Cathode):
Input 16.0 to 18.5 uufd
Output 4.0 to 5.0 uufd
Feed-Through 0.06 uufd

Base 9-pin, special
Socket Eimac SK-600 series
Max. Seal Temp. 250 °C
Max. Anode-Core Temp. 250 °C
Max. Height 2.464 inches
Max. Diameter 1.640 inches
Net Weight 4 ounces

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amp)	Plate Diss. (watts)	Screen Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amp)	Drive Power (watts)	Output Power (watts)
AB_1	Audio-Frequency Power Amplifier and Modulator	2000	0.250	250	12	—	2000	350	0.500*	0	625*
AB_1	Radio-Frequency Linear Power Amplifier—SSB	2000	0.250	250	12	—	2000	400	0.245	0	495
C	Radio-Frequency Power Amplifier and Oscillator	2000	0.250	250	12	2	2000	250	0.250	2.9	390
C	Plate-Modulated R-F Power Amplifier	1500	0.200	165	12	2	1500	250	0.200	1.7	235

*Two tubes.

4CX250R/7580W

A recent addition to the Eimac line of ceramic-metal tetrodes, the 4CX250R is a ruggedized version of the 7580. It is intended for use in environments where shock and vibration levels preclude the use of such a tube as the 4CX250B, and where the use of a higher-perveance tetrode is indicated. The 4CX250R is designed to operate with maximum rated plate and screen voltages applied in equipment where shock and/or vibration is experienced.

PLATE DISSIPATION 250 watts
FREQUENCY FOR MAXIMUM RATINGS 500 megacycles
COOLING Forced Air

CHARACTERISTICS

Cathode: Oxide-coated, unipotential
Heater:
Voltage 6.0 volts
Current 2.3 to 2.9 amperes
Capacitances (Grounded Cathode):
Input 16.0 to 18.5 uufd
Output 4.2 to 5.2 uufd
Feed-Through 0.06 uufd

Base 9-pin, special
Socket Eimac SK-600 series
Max. Seal Temp. 250 °C
Max. Anode-Core Temp. 250 °C
Max. Height 2.464 inches
Max. Diameter 1.640 inches
Net Weight 4 ounces

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amp)	Plate Diss. (watts)	Screen Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amp)	Drive Power (watts)	Output Power (watts)
AB_1	Audio-Frequency Power Amplifier and Modulator	2000	0.250	250	12	—	2000	350	0.500*	0	625*
AB_1	Radio-Frequency Linear Power Amplifier—SSB	2000	0.250	250	12	—	2000	400	0.245	0	495
C	Radio-Frequency Power Amplifier and Oscillator	2000	0.250	250	12	2	2000	250	0.250	2.9	390
C	Plate-Modulated R-F Power Amplifier	1500	0.200	165	12	2	1500	250	0.200	1.7	235

*Two tubes.

4CX250K/8245 and 4CX250M/8246

These coaxial base tetrodes are particularly useful as a CW rf amplifier between 500 and 1200 megacycles, in pulse applications, the useful frequency is above 1500 megacycles. The 4CX250K employs a 6.0 volt heater while the 4CX250M uses a 26.5 volt heater.

PLATE DISSIPATION 250 watts
FREQUENCY FOR MAXIMUM RATINGS 500 megacycles
COOLING Forced Air

CHARACTERISTICS

Cathode: Oxide-coated, unipotential
Heater: **4CX250K** **4CX250M**
Voltage 6.0 26.5 volts
Current 2.3 to 3.0 0.53 to 0.68 amps
Capacitances (Grounded Cathode):
Input 25.0 to 29.0 uufd
Output 4.0 to 4.9 uufd
Feed-Through 0.05 uufd

Base Special, coaxial
Max. Seal Temp. 250 °C
Max. Anode-Core Temp. 250 °C
Max. Height 2.813 inches
Max. Diameter 1.640 inches
Net Weight 4 ounces

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amp)	Plate Diss. (watts)	Screen Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amp)	Drive Power (watts)	Output Power (watts)
AB_1	Radio-Frequency Linear Power Amplifier—SSB	2000	0.250	250	12	—	2000	350	0.250	0	300
C	Radio-Frequency Power Amplifier and Oscillator	2000	0.250	250	12	2	2000	250	0.250	2.9	390
C	Plate-Modulated RF Power Amplifier	1500	0.200	165	12	2	1500	250	0.200	1.7	235

4CX300A/8167

This rugged ceramic-metal tetrode with unique breechblock basing has electrical characteristics similar to other tubes in the 4X150 and 4X250 families but is especially suited for service in severe environments. Its unusual internal construction assures reliable operation at acceleration levels up to 20 g's. Suitable for service from dc to 500 megacycles, the 4CX300A is first choice for use in new equipments where shock and/or vibration are expected.

PLATE DISSIPATION 300 watts
FREQUENCY FOR MAXIMUM RATINGS 500 megacycles
COOLING Forced Air

CHARACTERISTICS

Cathode: Oxide-coated, unipotential
Heater:
Voltage 6.0 volts
Current 2.2 to 3.2 amperes
Capacitances (Grounded Cathode):
Input 25 to 33 uufd
Output 3.5 to 4.5 uufd
Feed-Through 0.06 uufd

Base Special, breechblock
Socket Eimac SK-700 series
Max. Seal Temp. 225 °C
Max. Anode-Core Temp. 250 °C
Max. Height 2.5 inches
Max. Diameter 1.65 inches
Net Weight 4 ounces

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amp)	Plate Diss. (watts)	Screen Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amp)	Drive Power (watts)	Output Power (watts)
AB_1	Audio-Frequency Power Amplifier and Modulator	2500	0.250	300	12	—	2500	350	0.500*	0	800*
AB_1	Radio-Frequency Linear Power Amplifier—SSB	2500	0.250	300	12	—	2500**	350	0.250	0	400
C	Radio-Frequency Power Amplifier and Oscillator	2500	0.250	300	12	2	2500**	250	0.250	2.8	500
C	Plate-Modulated R-F Power Amplifier	1500	0.200	200	12	2	1500	250	0.200	1.7	235

*Two tubes. **Below 250 mc. only.

TETRODES

EXTERNAL ANODE ■ FORCED-AIR COOLED

4CX300Y

This special version of the 4CX300A has a higher plate current rating which allows 60 per cent more input power. Physically identical to the 4CX300A, the Eimac 4CX300Y is attractive for general use wherever a compact high-power tetrode is indicated.

PLATE DISSIPATION 400 watts
COOLING Forced Air

CHARACTERISTICS

Cathode: Oxide-coated, unipotential
Heater:
Voltage 6.0 volts
Current 3.00 to 3.85 amperes
Capacitances (Grounded Cathode):
Input 30.0 to 38.0 uufd
Output 3.9 to 5.0 uufd
Feed-Through 0.07 uufd

Base Special, breechblock
Socket Eimac SK-700 series
Max. Seal Temp. 250 °C
Max. Anode Core Temp. 250 °C
Max. Height 2.5 inches
Max. Diameter 1.65 inches
Net Weight 4 ounces

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amps)	Plate Diss. (watts)	Screen Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	Radio-Frequency Power Amplifier and Oscillator	2500	0.400	400	8	1	2000	300	0.400	12*	500*

*Measured value in a typical 110 Mc amplifier.

4CX350A/8321 and 4CX350F/8322

These tubes are externally identical to the 4CX250B but contain more rugged internal construction. These compact radial beam tetrodes have plate dissipation ratings of 350 watts.
These tubes are intended primarily for Class-AB_1 linear service having high transconductance and allowing full output with extremely low drive requirements. The 4CX350A and 4CX350F differ only in heater voltages.

PLATE DISSIPATION 350 watts
FREQUENCY FOR MAXIMUM RATINGS 500 megacycles
COOLING Forced Air

CHARACTERISTICS

Cathode: Oxide-coated, unipotential
Heater: **4CX350A** **4CX350F**
Voltage 6.0 26.5 volts
Current 2.9 to 3.6 0.66 to 0.81 amps
Capacitances (Grounded Cathode):
Input 22.2 to 26.2 uufd
Output 5.0 to 6.0 uufd
Feed-Through 0.05 uufd

Base Special, breechblock
Socket Eimac SK-600 Series
Max. Seal Temp. 250 °C
Max. Anode-Core Temp. 250 °C
Max. Height 2.46 inches
Max. Diameter 1.64 inches
Net Weight 4 ounces

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amp)	Plate Diss. (watts)	Screen Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
AB_1	Audio-Frequency Power Amplifier and Modulator	2000	0.4	350	8	—	2000	400	0.54*	0	600*
AB_1	Radio-Frequency Linear Power Amplifier—SSB	2000	0.4	350	8	—	2000	400	0.27	0	300

*Two tubes.

4X500A

This medium-power external-anode tetrode finds wide acceptance in FM broadcast service. The instant-heating filament of thoriated tungsten and the overall compactness are but two of the 4X500A's bonus features. Maximum ratings apply to 120 megacycles.

PLATE DISSIPATION 500 watts
FREQUENCY FOR MAXIMUM RATINGS
120 megacycles — class-C CW
220 megacycles — class-B TV
COOLING Forced Air

CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 5.0 volts
Current 12.2 to 13.7 amperes
Capacitances (Grounded Cathode):
Input 10.6 to 14.4 uufd
Output 4.9 to 6.9 uufd
Feed-Through 0.1 uufd

Base 4-pin special
Socket Eimac SK-900
Max. Anode-Core Temp. 150 °C
Max. Seal Temp. 150 °C
Max. Height 4.750 inches
Max. Diameter 2.625 inches
Net Weight 1.17 pounds

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amp)	Plate Diss. (watts)	Screen Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amp)	Drive Power (watts)	Output Power (watts)
B_{TV}	Radio-Frequency Linear Amplifier — TV Visual Service	3000	0.350	500	30	10	2400	500	0.400*	25*	600*
C	Radio-Frequency Power Amplifier and Oscillator	4000	0.350	500	30	10	4000	500	0.315	5	835

*Peak synchronizing level.

4CX1000A

This high-power ceramic-metal tetrode is an excellent choice for applications where class-AB_1 operation is desired. It is capable of delivering more than 1500 watts plate output power per tube in audio or r-f service without requiring grid driving power. It is recommended for use in new equipments.

PLATE DISSIPATION 1000 watts
FREQUENCY FOR MAXIMUM RATINGS 110 megacycles
COOLING Forced Air

CHARACTERISTICS

Cathode: Oxide-coated, unipotential
Heater:
Voltage 6.0 volts
Current 9.5 to 11.5 amperes
Capacitances (Grounded Cathode):
Input 77 to 90 uufd
Output 11 to 13 uufd
Feed-Through 0.02 uufd

Base Special, breechblock
Socket Eimac SK-800 series
Max. Seal Temp. 250 °C
Max. Anode-Core Temp. 250 °C
Max. Height 4.8 inches
Max. Diameter 3.37 inches
Net Weight 27 ounces

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amp)	Plate Diss. (watts)	Screen Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
AB_1	Audio-Frequency Power Amplifier and Modulator	3000	1.0	1000	12	—	3000	325	1.75*	0	3260*
AB_1	Radio-Frequency Linear Power Amplifier—SSB	3000	1.0	1000	12	—	3000	325	.875	0	1630

*Two tubes.

NEW PRODUCT

TETRODES

EXTERNAL ANODE ■ FORCED-AIR COOLED

4CX1000K

This high-power ceramic-metal tetrode is electrically identical to the 4CX1000A, but gives improved performance at UHF due to its solid-ring screen terminal. This terminal surface improves isolation between input and output circuits to a marked degree and insures stable UHF operation as a class-AB_1 amplifier.

PLATE DISSIPATION 1000 watts
FREQUENCY FOR MAXIMUM RATINGS 500 megacycles
COOLING Forced Air

CHARACTERISTICS

Cathode: Oxide-coated, unipotential
Voltage 6.0 volts
Current 10.5 amperes
Capacitances (Grounded Cathode):
Input 84 uufd
Output 12 uufd
Feed-Through 0.02 uufd

Base Special, ring and breechblock
Socket Special
Max. Seal Temp. 250 °C
Max. Anode Core Temp. 250 °C
Max. Height 4.75 inches
Max. Diameter 3.36 inches
Net Weight 28 ounces

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amps)	Plate Diss. (watts)	Screen Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
AB_1	Radio-Frequency Linear Power Amplifier—SSB	3000	1.0	1000	12	—	2700	250	0.680	0	1100

4CX3000A

The 4CX3000A is a new ceramic-metal tetrode designed especially for class-AB_1 linear amplifier service. In such service, the intermodulation distortion products produced by the 4CX3000A are of very low level, typically 32 to 44 db below PEP level, depending on operating conditions. The ample grid and screen dissipation ratings also make the 4CX3000A attractive for use as a class-C amplifier. The 4CX3000A is first choice for modern, new equipment design.

PLATE DISSIPATION 3000 watts
FREQUENCY FOR MAXIMUM RATINGS 110 megacycles
COOLING Forced Air

CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 10.0 volts
Current 45 amperes
Capacitances (Grounded Filament):
Input 140 uufd
Output 20 uufd
Feed-Through 0.9 uufd

Base Special, ring and breechblock
Socket Eimac SK-1400
Max. Seal Temp. 250 °C
Max. Anode Core Temp. 250 °C
Max. Height 7.90 inches
Max. Diameter 4.63 inches
Net Weight 5.5 pounds

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amps)	Plate Diss. (watts)	Screen Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
AB_1	Audio-Frequency Power Amplifier and Modulator	6000	2.0	3000	175	50	5000	850	3.3*	0	11,200*
AB_1	Radio-Frequency Linear Power Amplifier—SSB	6000	2.0	3000	175	50	5000	850	1.65	0	5600
C	Radio-Frequency Power Amplifier and Oscillator	7000	2.0	3000	175	50	7000	500	1.9	47	11,000
C	Plate-Modulated R-F Power Amplifier	5000	1.4	2000	175	50	5000	400	1.35	42	5500

*Two tubes.

4CX5000A

This high-power ceramic and metal tetrode features high class-AB_1 output power at audio and radio frequencies. It is also an excellent choice for AM or FM commercial service where high-efficiency class-C operation is desired. Its modern and straight-forward design makes it preferred for use in new equipments.

PLATE DISSIPATION 5000 watts
FREQUENCY FOR MAXIMUM RATINGS 30 megacycles
COOLING Forced Air

CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 7.5 volts
Current 73 to 78 amperes
Capacitances (Grounded Filament):
Input 108 to 122 uufd
Output 18.0 to 23.0 uufd
Feed-Through 1.0 uufd

Base Special, concentric
Socket Eimac SK-300A
Max. Seal Temp. 250 °C
Max. Anode-Core Temp. 250 °C
Max. Height 9.125 inches
Max. Diameter 4.938 inches
Net Weight 9.5 pounds

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amps)	Plate Diss. (watts)	Screen Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
AB_1	Audio-Frequency Power Amplifier and Modulator	7500	4.0	6000	250	—	7000	1250	3.65*	0	17,500*
AB_1	Radio-Frequency Linear Power Amplifier—SSB	7500	4.0	6000	250	—	7500	1250	1.9	0	10,000
C	Radio-Frequency Power Amplifier and Oscillator	7500	3.0	5000	250	75	7500	500	2.8	150	16,000
C	Plate-Modulated R-F Power Amplifier	5000	2.5	3500	250	75	5000	500	1.4	25	5800

*Two tubes.

4CX5000R

A ruggedized version of the 4CX5000A power tetrode, the 4CX5000R incorporates a sturdy mesh cathode construction. Electrically identical to the "A" version, it is an excellent choice for high power applications in severe environments.

PLATE DISSIPATION 5000 watts
FREQUENCY FOR MAXIMUM RATINGS 30 megacycles
COOLING Forced Air

CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 7.5 volts
Current 73 to 78 amperes
Capacitances (Grounded Filament):
Input 108 to 122 uufd
Output 18.0 to 23.0 uufd
Feed-Through 1.0 uufd

Base Special, concentric
Socket Eimac SK-300A
Max. Seal Temp. 250 °C
Max. Anode-Core Temp. 250 °C
Max. Height 9.125 inches
Max. Diameter 4.938 inches
Net Weight 9.5 pounds

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amps)	Plate Diss. (watts)	Screen Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
AB_1	Audio-Frequency Power Amplifier and Modulator	7500	4.0	6000	250	—	7000	1250	3.65*	0	17,500*
AB_1	Radio-Frequency Linear Power Amplifier—SSB	7500	4.0	6000	250	—	7500	1250	1.9	0	10,000
C	Radio-Frequency Power Amplifier and Oscillator	7500	3.0	5000	250	75	7500	500	2.8	150	16,000
C	Plate-Modulated RF Power Amplifier	5000	2.5	3500	250	75	5000	500	1.4	25	5800

*Two tubes.

NEW PRODUCT

TETRODES

EXTERNAL ANODE ■ FORCED-AIR COOLED

4CX10,000D

This recent addition to the Eimac line is electrically identical to the 4CX5000A except for its plate dissipation rating and is intended for use where the extra plate dissipation is a necessity. It may be used at maximum ratings through 30 megacycles and at slightly reduced ratings through the FM broadcast band.

PLATE DISSIPATION 12,000 watts
FREQUENCY FOR MAXIMUM RATINGS 30 megacycles
COOLING Forced Air

CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 7.5 volts
Current 73 to 78 amperes
Capacitances (Grounded Filament):
Input 115 uufd
Output 21 uufd
Feed-through 1.0 uufd

Base Special, concentric
Socket Eimac SK-300A
Max. Seal Temp. 250 °C
Max. Anode-Core Temp. 250 °C
Max. Height 9.13 inches
Max. Diameter 7.05 inches
Net Weight 12.2 pounds

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amp)	Plate Diss. (watts)	Screen Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amp)	Drive Power (watts)	Output Power (watts)
AB_1	Audio-Frequency Power Amplifier and Modulator	7500	4.00	12,000	250	—	7500	1500	7.18*	0	34,300*
AB_1	Radio-Frequency Linear Power Amplifier	7500	4.00	12,000	250	—	7500	1500	3.59	0	17,150

*Two tubes.

4CX15,000A

A versatile addition to the Eimac line of ceramic-metal power tetrodes, the 4CX15,000A is similar to the 4CX10,000D but features higher plate voltage and current and greater plate dissipation. These increased capabilities allow it to operate at full ratings through the FM broadcast band. The 4CX15,000A is recommended for use in new equipment design.

PLATE DISSIPATION 15,000 watts
FREQUENCY FOR MAXIMUM RATINGS 110 megacycles
COOLING Forced Air

CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 6.3 volts
Current 152 to 168 amperes
Capacitances (Grounded Filament):
Input 158 to 172 uufd
Output 22.0 to 27.0 uufd
Feed-Through 2.0 uufd

Base Special, concentric
Socket Eimac SK-300A
Max. Seal Temp. 250 °C
Max. Anode Core Temp. 250 °C
Max. Height 9.44 inches
Max. Diameter 7.58 inches
Net Weight 12.8 pounds

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amps)	Plate Diss. (watts)	Screen Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	Radio-Frequency Power Amplifier and Oscillator	10,000	5.0	15,000	450	200	10,000	750	4.55	220	36,500
C	Plate-Modulated rf Power Amplifier	8,000	4.0	10,000	450	200	8,000	750	3.65	150	23,500
AB_1	Audio-Frequency Power Amplifier or Modulator	10,000	6.0	15,000	450	200	10,000	1500	8.5*	0	57,000*

*Two tubes.

4CX35,000C/8349

Eimac's largest, forced-air cooled power tetrode has a plate dissipation rating of 35 kilowatts and is usable to 20,000 plate volts in Class-C and Class-AB amplifier service.
A single 4CX35,000C will deliver over 100 kilowatts of CW power as a Class-C power amplifier or oscillator.

PLATE DISSIPATION 35,000 watts
FREQUENCY FOR MAXIMUM RATINGS 30 megacycles
COOLING Forced Air

CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 10.0 volts
Current 300 amperes
Capacitances (Grounded Filament):
Input 430 uufd
Output 45 uufd
Feed-Through 2.3 uufd

Base Special, concentric rings
Socket Eimac SK-1500
Max. Seal Temp. 250 °C
Max. Anode Core Temp. 250 °C
Max. Height 15.0 inches
Max. Diameter 9.75 inches
Net Weight 50 pounds

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amps)	Plate Diss. (watts)	Screen Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
AB_1	Audio-Frequency Power Amplifier and Modulator	20,000	15.0	35,000	1750	500	20,000	1000	13.2*	0	220,000*
AB_1	Radio-Frequency Linear Power Amplifier—SSB	20,000	15.0	35,000	1750	500	20,000	1000	6.6	0	110,000
C	Radio-Frequency Power Amplifier and Oscillator	20,000	15.0	35,000	1750	500	20,000	500	6.35	230	110,000
C	Plate-Modulated rf Power Amplifier	15,000	15.0	23,000	1750	500	15,000	500	6.45	250	82,500

*Two tubes.

EXTERNAL ANODE ■ WATER COOLED

4W300B

A general-purpose radial-beam tetrode with electrical characteristics similar to those of the Eimac 4X250B, this water-cooled version is intended for use where reserve anode dissipation is desired or where the use of water is a convenience. Maximum ratings apply to frequencies as high as 500 megacycles.

PLATE DISSIPATION 300 watts
FREQUENCY FOR MAXIMUM RATINGS 500 megacycles
COOLING Water and Forced Air

CHARACTERISTICS

Cathode: Oxide-coated, unipotential
Heater:
Voltage 6.0 volts
Current 2.3 to 2.9 amperes
Capacitances (Grounded Cathode):
Input 14.2 to 17.2 uufd
Output 4.0 to 5.0 uufd
Feed-Through 0.06 uufd

Base 9-pin, special
Socket Eimac SK-600 series
Max. Seal Temp. 175 °C
Max. Height 3.407 inches
Max. Diameter 2.126 inches
Net Weight 6 ounces

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amp)	Plate Diss. (watts)	Screen Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amp)	Drive Power (watts)	Output Power (watts)
AB_1	Audio-Frequency Power Amplifier and Modulator	2000	0.250	250	12	—	2000	350	0.500*	0	600*
AB_1	Radio-Frequency Linear Power Amplifier—SSB	2000	0.250	250	12	—	2000	350	0.250	0	300
C	Radio-Frequency Power Amplifier and Oscillator	2000	0.250	250	12	2	2000	250	0.250	2.9	390
C	Plate-Modulated R-F Power Amplifier	1500	0.200	165	12	2	1500	250	0.200	1.7	235

*Two tubes.

NEW PRODUCT

TETRODES

EXTERNAL ANODE ■ WATER COOLED

4CW2000A

This recent addition to the Eimac line is electrically identical to the popular 4CX1000A except for its plate-dissipation rating which is 2000 watts. It is intended for use where water cooling is preferred or where higher anode-dissipation capability is required.

PLATE DISSIPATION 2000 watts
FREQUENCY FOR MAXIMUM RATINGS 110 megacycles
COOLING Water and Forced Air

CHARACTERISTICS

Cathode: Oxide-coated, unipotential
Heater:
Voltage 6.0 volts
Current 9.5 to 11.5 amperes
Capacitances (Grounded Cathode):
Input 77 to 90 uufd
Output 11 to 13 uufd
Feed-Through 0.02 uufd
Base Special, breechblock
Socket Eimac SK-800 series
Max. Seal Temp. 250 °C
Max. Height 5.875 inches
Max. Diameter 2.625 inches
Net Weight 1.75 pounds

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amp)	Plate Diss. (watts)	Screen Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
AB_1	Audio-Frequency Power Amplifier and Modulator	3000	1.0	2000	12	—	3000	325	1.8*	0	3360*
AB_1	Radio-Frequency Linear Power Amplifier—SSB	3000	1.0	2000	12	—	3000	325	0.9	0	1680

*Two tubes.

4CW10,000A

Electrically identical to the 4CX5000A except for its plate dissipation rating, the 4CW10,000A is intended for use where water cooling is preferred or where the extra plate dissipation is a necessity. It may be used at maximum ratings through 30 megacycles and at slightly reduced ratings through the FM broadcast band.

PLATE DISSIPATION 12,000 watts
FREQUENCY FOR MAXIMUM RATINGS 30 megacycles
COOLING Water and Forced Air

CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 7.5 volts
Current 73 to 78 amperes
Capacitances (Grounded Filament):
Input 106 uufd
Output 18 uufd
Feed-Through 0.75 uufd
Base Special, concentric
Socket Eimac SK-300A
Max. Seal Temp. 250 °C
Max. Height 11.407 inches
Max. Diameter 4.656 inches
Net Weight 7.5 pounds

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amps)	Plate Diss. (watts)	Screen Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
AB_1	Audio-Frequency Power Amplifier and Modulator	7500	4.00	12,000	250	—	7500	1500	7.18*	0	34,300*
AB_1	Radio-Frequency Linear Power Amplifier	7500	4.00	12,000	250	—	7500	1500	3.59	0	17,150

*Two tubes.

4W20,000A

This very-high-power water-cooled tetrode with electron-bombarded unipotential cathode suggests itself for use in circuitry where high peak currents are required. Accordingly, it finds wide acceptance in TV amplifiers, pulse modulators, linear accelerators, etc. Its water-cooled anode also allows its use in low-efficiency applications where high plate dissipation is encountered.

PLATE DISSIPATION 20,000 watts
FREQUENCY FOR MAXIMUM RATINGS 220 megacycles
COOLING Water and Forced Air

CHARACTERISTICS

Cathode: Thoriated tungsten, unipotential, bombardment-heated
D-C Voltage 1400 volts
D-C Current 1.8 amperes
Capacitances (Grounded Grid):
Input 75 to 87 uufd
Output 21 to 25.5 uufd
Feed-Through 0.04 to 0.06 uufd
Base Special, concentric
Max. Glass-Seal Temp. 150 °C
Max. Ceramic-Seal Temp. 250 °C
Max. Height 15.2 inches
Max. Diameter 5.013 inches
Net Weight 7.6 pounds

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amps)	Plate Diss. (watts)	Screen Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (kw)
B_{TV}	Radio-Frequency Linear Amplifier—TV Visual Service	8000	15	20,000	200	60	7000	1200	6.0*	500	26
C	Radio-Frequency Power Amplifier	8000	15	20,000	200	60	7000	1200	3.4	830	13

*Peak synchronizing level.

4CW50,000C/8350

The water-cooled version of the 4CX35,000C, this high power tetrode is capable of over 150 kilowatts output in Class-C service.
Full plate dissipation of 50 kilowatts is realized with lower than usual water flow due to superior anode-water jacket design.

PLATE DISSIPATION 50,000 watts
FREQUENCY FOR MAXIMUM RATINGS 30 megacycles
COOLING Water and Forced Air

CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 10.0 volts
Current 300 amperes
Capacitances (Grounded Filament):
Input 430 uufd
Output 45 uufd
Feed-Through 2.3 uufd
Base Special, concentric rings
Socket Eimac SK-1500
Max. Seal Temp. 250 °C
Max. Anode Core Temp. 250 °C
Max. Height 16.5 inches
Max. Diameter 8.02 inches
Net Weight 48 pounds

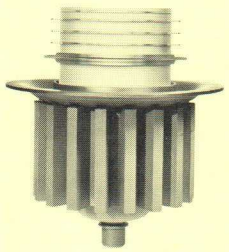
Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amps)	Plate Diss. (watts)	Screen Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
AB_1	Audio-Frequency Power Amplifier and Modulator	20,000	15.0	50,000	1750	500	20,000	1500	17.3*	0	250,000*
AB_1	Radio-Frequency Linear Power Amplifier—SSB	20,000	15.0	50,000	1750	500	20,000	1500	8.65	0	125,000
C	Radio-Frequency Power Amplifier and Oscillator	20,000	15.0	50,000	1750	500	20,000	750	9.7	705	165,000
C	Plate-Modulated rf Power Amplifier	15,000	15.0	33,000	1750	500	15,000	750	8.95	570	110,000

*Two tubes.

NEW PRODUCT

TETRODES

EXTERNAL ANODE ■ VAPOR COOLED



4CV8000A

This vapor-cooled version of Eimac's 4CX3000A offers a conservative plate dissipation rating of 8000 watts. It is recommended for Class-AB audio and radio-frequency applications as well as Class-C rf amplifier service.
A pair of these tubes will deliver over 14 kilowatts of audio frequency output with low distortion in Class-AB_1 service.

PLATE DISSIPATION — **8000 watts**
FREQUENCY FOR MAXIMUM RATINGS — **150 megacycles**
COOLING — **Vapor and Forced Air**

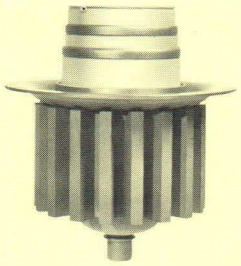
CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 10.0 volts
Current 43.5 to 48.5 amperes
Capacitances (Grounded Filament):
Input 120 to 140 uufd
Output 10.5 to 14.5 uufd
Feed-Through 1.4 uufd

Base Special, ring and breechblock
Socket Eimac SK-1490
Max. Seal Temp. 250 °C
Max. Anode Core Temp. 250 °C
Max. Height 7.983 inches
Max. Diameter 7.016 inches
Net Weight 7.0 pounds

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amps)	Plate Diss. (watts)	Screen Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
AB_1	Audio-Frequency Power Amplifier and Modulator	6000	2.0	8000	175	50	6000	850	4.0*	0	14,500*
AB_1	Radio-Frequency Linear Power Amplifier—SSB	6000	2.0	8000	175	50	6000	850	2.0	0	7,250
C	Radio-Frequency Power Amplifier and Oscillator	7000	2.0	8000	175	50	7000	500	1.9	47	11,000
C	Plate-Modulated rf Power Amplifier	5000	1.4	5500	175	50	5000	400	1.35	42	5,500

*Two tubes.



4CV20,000A

A vapor-cooled version of the popular 4CX5000A, the 4CV20,000A has a plate dissipation rating of 20 kilowatts. Two of these tubes in a push-pull, Class-AB_1 amplifier will produce 35 kilowatts output.
A full complement of vapor cooling accessories is available for this and all other Eimac vapor-cooled tube types.

PLATE DISSIPATION — **20,000 watts**
FREQUENCY FOR MAXIMUM RATINGS — **30 megacycles**
COOLING — **Vapor and Forced Air**

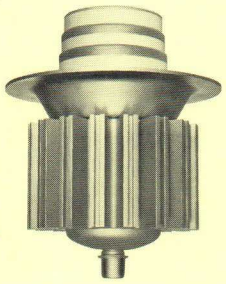
CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 7.5 volts
Current 73 to 78 amperes
Capacitances (Grounded Filament):
Input 108 to 122 uufd
Output 18.0 to 23.0 uufd
Feed-Through 1.0 uufd

Base Special, concentric
Socket Eimac SK-310
Max. Seal Temp. 250 °C
Max. Anode-Core Temp. 250 °C
Max. Height 9.125 inches
Max. Diameter 7.75 inches
Net Weight 21 pounds

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amps)	Plate Diss. (watts)	Screen Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
AB_1	Audio-Frequency Power Amplifier and Modulator	7500	4.0	6000	250	—	7500	1500	8.0*	0	35,000*
AB_1	Radio-Frequency Linear Power Amplifier—SSB	7500	4.0	6000	250	—	7500	1500	4.0	0	17,500
C	Radio-Frequency Power Amplifier and Oscillator	7500	3.0	5000	250	75	7500	500	3.0	155	17,000
C	Plate-Modulated rf Power Amplifier	5000	2.5	3500	250	75	5000	500	2.2	77	7,750

*Two tubes.



4CV35,000A

Recommended for use as a modulator, oscillator or amplifier, the 4CV35,000A is usable to 110 megacycles. With a plate voltage of 10 kV in Class-C service, the tube is capable of over 35 kilowatts output power. The plate dissipation of 35 kilowatts allows use of the 4CV35,000A in low efficiency Class-AB_1 circuits.

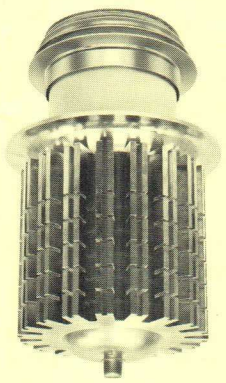
PLATE DISSIPATION — **35,000 watts**
FREQUENCY FOR MAXIMUM RATINGS — **110 megacycles**
COOLING — **Vapor and Forced Air**

CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 6.3 volts
Current 152 to 168 amperes
Capacitances (Grounded Filament):
Input 158 to 172 uufd
Output 22.0 to 27.0 uufd
Feed-Through 2.0 uufd

Base Special, concentric
Socket Eimac SK-310
Max. Seal Temp. 250 °C
Max. Anode Core Temp. 250 °C
Max. Height 9.125 inches
Max. Diameter 7.88 inches
Net Weight 24 pounds

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amps)	Plate Diss. (watts)	Screen Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	Radio-Frequency Power Amplifier and Oscillator	10,000	5.0	35,000	450	200	10,000	750	4.8	225	38,000
C	Plate-Modulated rf Power Amplifier	7500	4.0	23,000	450	200	7500	750	3.65	150	23,500
AB_1	Audio-Frequency Power Amplifier or Modulator	10,000	6.0	35,000	450	200	10,000	1500	5.35	0	33,000



4CV100,000C

The largest of Eimac's power grid tubes, the 4CV100,000C is finding wide acceptance in application where a very high power rugged tetrode is desired. Vapor cooling allows a conservative plate dissipation rating of 100 kilowatts.

PLATE DISSIPATION — **100,000 watts**
FREQUENCY FOR MAXIMUM RATINGS — **30 megacycles**
COOLING — **Vapor and Forced Air**

CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 10.0 volts
Current 300 amperes
Capacitances (Grounded Filament):
Input 430 uufd
Output 45 uufd
Feed-Through 2.3 uufd

Base Special concentric rings
Socket Eimac SK-1510
Max. Seal Temp. 250 °C
Max. Anode Core Temp. 250 °C
Max. Height 17.0 inches
Max. Diameter 10.0 inches
Net Weight 95 pounds

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amps)	Plate Diss. (watts)	Screen Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
AB_1	Audio-Frequency Power Amplifier and Modulator	20,000	15.0	100,000	1750	500	20,000	1500	18.8*	0	260,000*
AB_1	Radio-Frequency Linear Power Amplifier—SSB	20,000	15.0	100,000	1750	500	20,000	1500	9.4	0	130,000
C	Radio-Frequency Power Amplifier and Oscillator	20,000	15.0	100,000	1750	500	20,000	1500	13.7	125	220,000
C	Plate-Modulated rf Power Amplifier	15,000	15.0	66,000	1750	500	15,000	750	13.0	1125	135,000

*Two tubes.

NEW PRODUCT

PENTODE AND PULSE MODULATORS

PENTODE ■ INTERNAL ANODE

4E27A/5-125B

A general-purpose compact pentode cooled by radiation and convection and with maximum ratings applicable to 75 megacycles. No forced-air cooling is required in most installations.

PLATE DISSIPATION 125 watts
FREQUENCY FOR MAXIMUM RATINGS 75 megacycles
COOLING Radiation and Convection

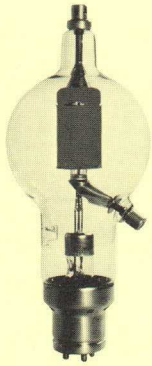
CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 5.0 volts
Current 7.0 to 8.0 amperes
Capacitances (Grounded Filament):
Input 8.7 to 12.3 uufd
Output 3.5 to 5.9 uufd
Feed-Through 0.1 uufd
Base 7-pin, metal shell
Socket Johnson 122-237
Max. Seal Temp. 225 °C
Max. Height 6.188 inches
Max. Diameter 2.750 inches
Net Weight 6 ounces

Class of Operation	Type of Service	Maximum Ratings: Plate Voltage (volts)	Plate Current (amp)	Plate Diss. (watts)	Supp. Diss. (watts)	Screen Diss. (watts)	Grid Diss. (watts)	Typical Operation: Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amp)	Drive Power (watts)	Output Power (watts)
AB_1	Audio-Freq. Power Amp. and Modulator	4000	0.200	125	20	20	—	2500	500	0.220*	0	300*
AB_2	Audio-Freq. Power Amp. and Modulator	4000	0.200	125	20	20	5	2500	500	0.250*	0.2*	400*
C	Radio-Freq. Power Amp. and Oscillator—Zero Suppressor Volts	4000	0.200	125	20	20	5	3000	500	0.167	1.9	375
C	Plate-Mod. Radio-Freq. Amp.—Zero Suppressor Volts	2500	0.160	85	20	20	5	2500	500	0.152	2	295
C	Suppressor-Mod. Radio-Freq. Amp.	4000	0.200	125	20	20	5	3000	400	0.060	1.2	75

*Two tubes.

PULSE MODULATORS



6C21

A high-vacuum triode designed for pulse-modulator service and incorporating a pyrovac plate and a non-emitting grid. It is recommended for use where long-pulse requirements rule out the use of tubes employing oxide-coated cathodes.

MAXIMUM PLATE VOLTAGE
30 kilovolts

MAXIMUM PULSE PLATE CURRENT
15 amperes

COOLING
Radiation & Forced Air

CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 8.2 volts
Current 15.9 to 17.7 amperes
Capacitances:
Grid-Plate 3.0 to 5.6 uufd
Grid-Filament 7.0 to 12.0 uufd
Plate-Filament 2.0 uufd
Base 50-watt jumbo 4-pin
Socket E. F. Johnson Co. No. 123-211 or National Co. XM-50
Maximum Seal Temp. 225 °C
Maximum Length 12.625 inches
Maximum Diameter 5.125 inches
Net Weight 1.3 pounds

MAXIMUM RATINGS

D-C PLATE VOLTAGE 30 kilovolts
PEAK PLATE CURRENT 15 amperes
PLATE DISSIPATION 300 watts
GRID DISSIPATION 50 watts

TYPICAL OPERATION

D-C Plate Voltage 28 kilovolts
Pulse Plate Voltage 25 kilovolts
Pulse Plate Current 15 amperes
Peak Drive Power 7.5 kilowatts
Peak Output Power 375 kilowatts
Duty 0.2 percent

4PR60B

The Eimac 4PR60B is a high-vacuum, radial-beam tetrode intended for pulse modulator service in circuits employing resistive loads. The 4PR60B supersedes the 4PR60A and unilaterally replaces the 715C and 5D21. It is recommended for use in equipment of new design.

MAXIMUM PLATE VOLTAGE
20 kilovolts

MAXIMUM PULSE PLATE CURRENT
18 amperes

COOLING
Radiation & Convection

CHARACTERISTICS

Cathode: Oxide-coated, unipotential
Heater:
Voltage 26.0 volts
Current 1.95 to 2.35 amperes
Capacitances (Grounded Cathode):
Input 35.0 to 50.0 uufd
Output 6.0 to 11.0 uufd
Feed-through 2.0 uufd
Socket E. F. Johnson Co. No. 122-234
Maximum Seal Temp. 200 °C
Maximum Envelope Temp. 200 °C
Maximum Length 6.0 inches
Maximum Diameter 3.063 inches
Net Weight 12 ounces

MAXIMUM RATINGS

D-C PLATE VOLTAGE 20 kilovolts
D-C SCREEN VOLTAGE 1.5 kilovolts
PEAK PLATE CURRENT 18 amperes
PLATE DISSIPATION 60 watts
SCREEN DISSIPATION 8 watts
GRID DISSIPATION 1 watt

TYPICAL OPERATION

D-C Plate Voltage 20 kilovolts
D-C Screen Voltage 1.25 kilovolts
Pulse Plate Voltage 18.75 kilovolts
Pulse Plate Current 18 amperes
Pulse Drive Power 552 watts
Pulse Output Power 337 kilowatts
Duty 0.001 percent
Pulse Duration 2 microseconds

4PR65A

A compact, high-vacuum, radial-beam tetrode incorporating a pyrovac plate and non-emitting grids, intended for pulse-modulator service. A new pulse modulator in the Eimac line, it is recommended for use in new equipments whenever long pulse durations, high duty factors, or high voltages preclude the use of tubes employing oxide-coated cathodes.

MAXIMUM PLATE VOLTAGE
15 kilovolts

MAXIMUM PULSE PLATE CURRENT
1 ampere

COOLING
Radiation and Convection

CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 6.0 volts
Current 3.2 to 3.8 amperes
Capacitances (Grounded Cathode):
Input 6.0 to 8.3 uuf
Output 1.9 to 2.6 uuf
Feed-through 0.12 uuf
Base 5-pin metal shell
Socket National HX-29 or Johnson 122-101
Maximum Base-Seal Temp. 200 °C
Max. Plate-Seal Temp. 225 °C
Maximum Length 4.38 inches
Maximum Diameter 2.38 inches
Net Weight 3 ounces

MAXIMUM RATINGS

D-C PLATE VOLTAGE 15 kilovolts
D-C SCREEN VOLTAGE 2 kilovolts
PEAK PLATE CURRENT 1 ampere
PLATE DISSIPATION 65 watts
SCREEN DISSIPATION 10 watts
GRID DISSIPATION 5 watts

TYPICAL OPERATION

D-C Plate Voltage 15 kilovolts
D-C Screen Voltage 1 kilovolt
Pulse Plate Voltage 14 kilovolts
Pulse Plate Current 1 ampere
Peak Drive Power 11 watts
Peak Output Power 14 kilowatts
Duty 5 percent

PULSE MODULATORS

4PR125A

A compact, high-vacuum, radial-beam tetrode incorporating a pyrovac plate and non-emitting grids, intended for pulse-modulator service. A new pulse modulator in the Eimac line, it is recommended for use in new equipments whenever long pulse durations, high duty factors, or high voltages preclude the use of tubes employing oxide-coated cathodes.

MAXIMUM PLATE VOLTAGE
18 kilovolts

MAXIMUM PULSE PLATE CURRENT
1.8 amperes

COOLING
Radiation and Forced Air

CHARACTERISTICS

Filament: Thoriated tungsten	
Voltage	5.0 volts
Current	6.0 to 7.0 amperes
Capacitances (Grounded Cathode):	
Input	9.2 to 12.4 uuf
Output	2.5 to 3.5 uuf
Feed-through	0.07 uuf
Base	5-pin metal shell
Socket	National HX-100 or Johnson 122-275
Maximum Base-Seal Temp.	200 °C
Maximum Plate-Seal Temp.	170 °C
Maximum Length	5.69 inches
Maximum Diameter	2.81 inches
Net Weight	6.5 ounces

MAXIMUM RATINGS

D-C PLATE VOLTAGE	18 kilovolts
D-C SCREEN VOLTAGE	2 kilovolts
PEAK PLATE CURRENT	1.8 amperes
PLATE DISSIPATION	125 watts
SCREEN DISSIPATION	20 watts
GRID DISSIPATION	5 watts

TYPICAL OPERATION

D-C Plate Voltage	18 kilovolts
D-C Screen Voltage	1 kilovolt
Pulse Plate Voltage	17 kilovolts
Pulse Plate Current	1.8 amperes
Peak Drive Power	30 watts
Peak Output Power	30.6 kilowatts
Duty	4.0 percent

4PR250C

A 50-kilovolt tetrode for use in pulse-modulator and switch-tube applications. The 4PR250C has a 250-watt plate dissipation rating and is capable of supplying pulses of four amperes and nearly 50 kilovolts to a resistive load. It is recommended for use in new equipments.

MAXIMUM PLATE VOLTAGE
50 kilovolts

MAXIMUM PULSE PLATE CURRENT
4 amperes

COOLING
Radiation and Forced Air

CHARACTERISTICS

Filament: Thoriated tungsten	
Voltage	5.0 volts
Current	13.5 to 14.7 amperes
Capacitances:	
Input	11 to 15 uufd
Output	2.7 to 3.7 uufd
Feed-Through	0.15 uufd
Socket	Eimac SK-400
Max. Plate-Seal Temp.	200 °C
Max. Envelope Temp.	200 °C
Max. Length	7.5 inches
Max. Diameter	3.5 inches
Net Weight	12.5 ounces

MAXIMUM RATINGS

D-C PLATE VOLTAGE	50 kilovolts
D-C SCREEN VOLTAGE	2 kilovolts
PEAK PLATE CURRENT	4 amperes
PLATE DISSIPATION	250 watts
SCREEN DISSIPATION	25 watts
GRID DISSIPATION	5 watts

TYPICAL OPERATION

D-C Plate Voltage	49.7 kilovolts
D-C Screen Voltage	1 kilovolt
Pulse Plate Voltage	48 kilovolts
Pulse Plate Current	4 amperes
Peak Drive Power	415 watts
Peak Output Power	192 kilowatts
Duty	1.7 percent

4PR400A

A compact, high-vacuum, radial-beam tetrode incorporating a pyrovac plate and non-emitting grids, intended for pulse-modulator service. A new pulse modulator in the Eimac line, it is recommended for use in new equipments whenever long pulse lengths, high duty factors, or high voltages preclude the use of tubes employing oxide-coated cathodes.

MAXIMUM PLATE VOLTAGE
20 kilovolts

MAXIMUM PULSE PLATE CURRENT
4 amperes

COOLING
Radiation & Forced Air

CHARACTERISTICS

Filament: Thoriated tungsten	
Voltage	5.0 volts
Current	13.5 to 14.7 amperes
Capacitances (Grounded Cathode):	
Input	10.7 to 14.5 uufd
Output	4.2 to 5.6 uufd
Feed-through	0.17 uufd
Base	5-pin metal shell
Socket	Eimac SK-400
Max. Base-Seal Temp.	200 °C
Max. Plate-Seal Temp.	225 °C
Maximum Length	8.0 inches
Maximum Diameter	3.6 inches
Net Weight	9 ounces

MAXIMUM RATINGS

D-C PLATE VOLTAGE	20 kilovolts
D-C SCREEN VOLTAGE	2.5 kilovolts
PEAK PLATE CURRENT	4 amperes
PLATE DISSIPATION	400 watts
SCREEN DISSIPATION	35 watts
GRID DISSIPATION	10 watts

TYPICAL OPERATION

D-C Plate Voltage	20 kilovolts
D-C Screen Voltage	1.5 kilovolts
Pulse Plate Voltage	19 kilovolts
Pulse Plate Current	4 amperes
Peak Drive Power	40 watts
Peak Output Power	76 kilowatts
Duty	1.5 percent

4PR1000A

A compact, high-vacuum, radial-beam tetrode incorporating a pyrovac plate and noh-emitting grids, intended for pulse-modulator service. New to the Eimac line, this heavy-duty pulse modulator is recommended for use in new equipments where high voltage, high current, or high duty preclude the use of tubes employing oxide-coated cathodes.

MAXIMUM PLATE VOLTAGE
30 kilovolts

MAXIMUM PULSE PLATE CURRENT
8 amperes

COOLING
Radiation & Forced Air

CHARACTERISTICS

Filament: Thoriated tungsten	
Voltage	7.5 volts
Current	20.0 to 22.7 amperes
Capacitances (Grounded Cathode):	
Input	23.8 to 32.4 uufd
Output	6.8 to 9.4 uufd
Feed-through	0.35 uufd
Base	5-pin metal shell
Socket	Eimac SK-500
Max. Base-Seal Temp.	150 °C
Max. Plate-Seal Temp.	200 °C
Maximum Length	9.63 inches
Maximum Diameter	5.25 inches
Net Weight	1.5 pounds

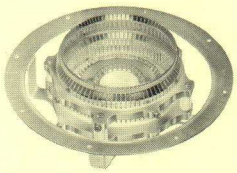
MAXIMUM RATINGS

D-C PLATE VOLTAGE	30 kilovolts
D-C SCREEN VOLTAGE	2.5 kilovolts
PEAK PLATE CURRENT	8 amperes
PLATE DISSIPATION	1000 watts
SCREEN DISSIPATION	75 watts
GRID DISSIPATION	25 watts

TYPICAL OPERATION

D-C Plate Voltage	30 kilovolts
D-C Screen Voltage	1.5 kilovolts
Pulse Plate Voltage	29.4 kilovolts
Pulse Plate Current	8 amperes
Peak Drive Power	900 watts
Peak Output Power	235 kilowatts
Duty	1.0 percent

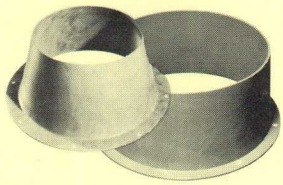
SOCKETS

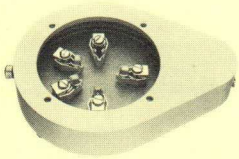


SK-300
SK-300A
SK-310

AIR-SYSTEM SOCKET	TUBE	SCREEN BYPASS CAPACITOR		GROUNDED CONTACTS	CHIMNEY
		CAPACITANCE (uufd)	VOLTAGE RATING (volts dc)		
SK-300 SK-300A	4CX5000A 4CX5000R	None	.....	None	SK-306
	4CX10,000D				SK-1306
	4CX15,000A				SK-316
	4CW10,000A 4CW20,000A				None
SK-310	4CV20,000A 4CV35,000A				

SK-306
SK-1306
SK-316

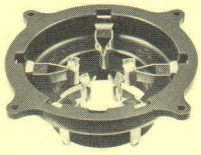




SK-400

AIR-SYSTEM SOCKET	TUBE	SCREEN BYPASS CAPACITOR		GROUNDED CONTACTS	CHIMNEY
		CAPACITANCE (uufd)	VOLTAGE RATING (volts dc)		
SK-400	4-125A 4-250A 4-400A 4PR125A 4PR250C 4PR400A	None	.....	None	SK-406

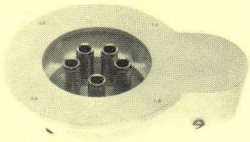
SK-406



SK-410

AIR-SYSTEM SOCKET	TUBE	SCREEN BYPASS CAPACITOR		GROUNDED CONTACTS	CHIMNEY
		CAPACITANCE (uufd)	VOLTAGE RATING (volts dc)		
SK-410	3-400Z	None	.....	None	SK-416
	4-125A 4-250A 4-400A 4PR125A 4PR400A				SK-406
	4PR250C				None

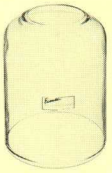
SK-416
SK-406

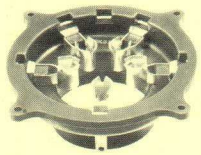


SK-500

AIR-SYSTEM SOCKET	TUBE	SCREEN BYPASS CAPACITOR		GROUNDED CONTACTS	CHIMNEY
		CAPACITANCE (uufd)	VOLTAGE RATING (volts dc)		
SK-500	4-1000A 4PR1000A	None	.....	None	SK-506

SK-506

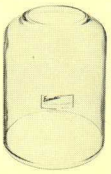




SK-510

AIR-SYSTEM SOCKET	TUBE	SCREEN BYPASS CAPACITOR		GROUNDED CONTACTS	CHIMNEY
		CAPACITANCE (uufd)	VOLTAGE RATING (volts dc)		
SK-510	3-1000Z	None	.....	None	SK-516
	4-1000A 4PR1000A				SK-506

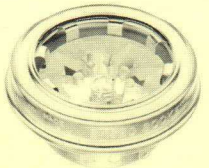
SK-516
SK-506



SK-600
SK-600A
SK-610

AIR-SYSTEM SOCKET	TUBE	SCREEN BYPASS CAPACITOR		GROUNDED CONTACTS	CHIMNEY
		CAPACITANCE (uufd)	VOLTAGE RATING (volts dc)		
SK-600 SK-600A	4X150A 4X150D 4X250B 4CX250B 4CX250F 4CX350A 4CX350F 4W300B 7580	2700	400	None	SK-606
SK-610				Cathode	

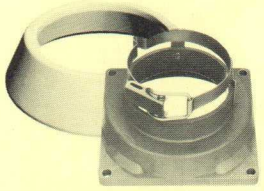
SK-606

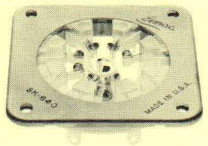


SK-620
SK-620A
SK-630
SK-630A

AIR-SYSTEM SOCKET	TUBE	SCREEN BYPASS CAPACITOR		GROUNDED CONTACTS	CHIMNEY
		CAPACITANCE (uufd)	VOLTAGE RATING (volts dc)		
SK-620 SK-620A	4X150A 4X150D 4X150R 4X150S 4X250B 4CX250B 4CX250F 4CX250R 4W300B 7580	1100	1000	None	SK-626 SK-636A SK-636B
SK-630 SK-630A				Cathode	

SK-626
SK-636A
SK-636B



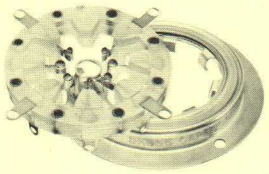


SK-640

AIR-SYSTEM SOCKET	TUBE	SCREEN BYPASS CAPACITOR		GROUNDED CONTACTS	CHIMNEY
		CAPACITANCE (uufd)	VOLTAGE RATING (volts dc)		
SK-640	4X150A 4X150D 4X250B 4CX250B 4CX250F 4CX350A 4CX350F 4W300B 7580	None	.....	None	SK-606

SK-606

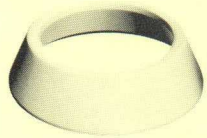
SOCKETS



SK-650
SK-655

AIR-SYSTEM SOCKET	TUBE	SCREEN BYPASS CAPACITOR		GROUNDED CONTACTS	CHIMNEY
		CAPACITANCE (uufd)	VOLTAGE RATING (volts dc)		
SK-650	4X150A 4X150D 4X250B 4X250F 4CX250B 4CX250F 4CX350A 4CX350F 4W300B 7580	None	.....	Cathode	None
SK-655		1100	1000		SK-626

SK-626

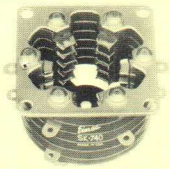


SK-700
SK-710
SK-711A

AIR-SYSTEM SOCKET	TUBE	SCREEN BYPASS CAPACITOR		GROUNDED CONTACTS	CHIMNEY
		CAPACITANCE (uufd)	VOLTAGE RATING (volts dc)		
SK-700	4CN15A 4CX125C 4CX125F 4CX300A	1100	400	1 Heater	SK-606
SK-710				1 Heater Cathode	
SK-711A*					

*The SK-711A differs from the SK-710 only in the altitude rating. The capacitor decks of the SK-711A have been especially flanged and the exposed section of the dielectric is sealed to permit a screen voltage of 350 Vdc at 60,000 feet.

SK-606

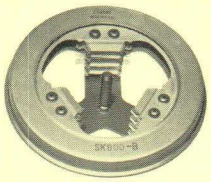


SK-740

AIR-SYSTEM SOCKET	TUBE	SCREEN BYPASS CAPACITOR		GROUNDED CONTACTS	CHIMNEY
		CAPACITANCE (uufd)	VOLTAGE RATING (volts dc)		
SK-740	4CN15A 4CX125C 4CX125F 4CX300A 4CX300Y	None	.....	None	.....

SK-760
SK-770

AIR-SYSTEM SOCKET	TUBE	SCREEN BYPASS CAPACITOR		GROUNDED CONTACTS	CHIMNEY
		CAPACITANCE (uufd)	VOLTAGE RATING (volts dc)		
SK-760	4CX300A 4CX300Y	None	.....	None	Integral Chimney
SK-770				Screen	



SK-800B
SK-810B
SK-860
SK-870
SK-890B

AIR-SYSTEM SOCKET	TUBE	SCREEN BYPASS CAPACITOR		GROUNDED CONTACTS	CHIMNEY
		CAPACITANCE (uufd)	VOLTAGE RATING (volts dc)		
SK-800B	4CX1000A 4CW2000A†	1500	400	None	SK-806
SK-810B SK-890B*				Cathode 1 Heater	
SK-860	3CX1000A7	None	.....	None	SK-816
SK-870				Grid	

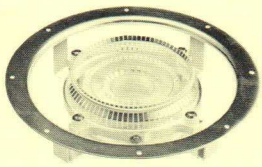
*Screen bypass capacitor isolated from screen contacts. †No chimney necessary.

SK-806
SK-816

SK-900

AIR-SYSTEM SOCKET	TUBE	SCREEN BYPASS CAPACITOR		GROUNDED CONTACTS	CHIMNEY
		CAPACITANCE (uufd)	VOLTAGE RATING (volts dc)		
SK-900	4X500A	650	700	None	SK-906

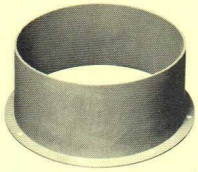
SK-906

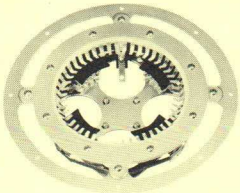


SK-1300
SK-1310

AIR-SYSTEM SOCKET	TUBE	SCREEN BYPASS CAPACITOR		GROUNDED CONTACTS	CHIMNEY
		CAPACITANCE (uufd)	VOLTAGE RATING (volts dc)		
SK-1300	3CX10,000A1 3CX10,000A3 3CX10,000A7	None	.....	None	SK-1306
	3CW20,000A1 3CW20,000A3 3CW20,000A7				None
SK-1310	3CV30,000A3				

SK-1306

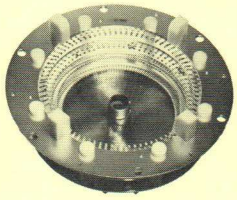




SK-1400A
SK-1470A
SK-1490

AIR-SYSTEM SOCKET	TUBE	SCREEN BYPASS CAPACITOR		GROUNDED CONTACTS	CHIMNEY
		CAPACITANCE (uufd)	VOLTAGE RATING (volts dc)		
SK-1400A	4CX3000A	1800	1000	None	SK-1406
SK-1470A		None	.....	Screen	
SK-1490	4CV8000A			None	None

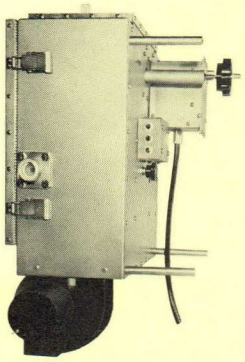
SK-1406



SK-1500
SK-1510

SOCKET	TUBE	SCREEN BYPASS CAPACITOR		GROUNDED CONTACTS	CHIMNEY
		CAPACITANCE (uufd)	VOLTAGE RATING (volts dc)		
SK-1500	4CX35,000C	None	.....	None	None
SK-1510	4CV100,000C 4CW50,000C				

COMPLETE CAVITY AMPLIFIERS



EM-4500

The Eimac EM-4500 is a complete radio frequency amplifier designed for installation on a standard 19 inch rack panel. It employs an Eimac 4CX1000K tetrode and is intended for use as a linear amplifier in a transmitter output stage.

FREQUENCY 145-150 Mc
POWER OUTPUT (UNMODULATED) 300 watts CW

CHARACTERISTICS

ELECTRICAL	
Frequency	145-150 Mc
Power Output (unmodulated)	300 watts CW
Driver Power Required	3 watts
Bandwidth	20 kc minimum at 3 db
Modulation	0-100% amplitude modulation 0-10,000 cps
MECHANICAL	
Dimensions:	
Height	16 inches
Width	14 inches
Depth	12 inches
Input Connector	Type N Female
Output Connector	Type LC Female
Cooling	50 CFM 0.5 inches H_2O

TYPICAL POWER SUPPLY REQUIREMENTS

	Voltage	Current
Anode	3000 V	0.5 A
Screen	325 V	−100 mA to +125 mA
Grid	−10 to −100 V	−0.25 mA to 0.75 mA
Heater/filament	6.0 V ± 5%	20 A max.

EM-4501

The Eimac EM-4501 is a complete radio frequency amplifier designed for installation in a standard 19 inch rack drawer. It employs an Eimac 4CX3000A tetrode and is intended for use as a power amplifier in a transmitter output stage.

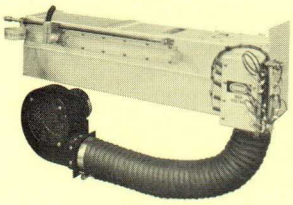
FREQUENCY 145-150 Mc
POWER OUTPUT 3 kW

CHARACTERISTICS

ELECTRICAL	
Frequency	145-150 Mc
Power Output	3 kW
Drive Power Required	175 watts
Bandwidth	20 kc minimum at 3 db
Modulation	0-100% high level amplitude modulation 0-10,000 cps
MECHANICAL	
Dimensions:	
Height	18 inches
Width	15¾ inches
Depth	14⅞ inches
Weight	60 pounds
Input Connector	Type N Female
Output Connector	Type LC Female
Cooling	170 CFM at 1.6 inches H_2O

TYPICAL POWER SUPPLY REQUIREMENTS

	Voltage	Current
Anode	4500 V	1.1 A
Screen	300 V	125 mA
Grid	−150 V	55 mA
Filament	9.0 V	45 A



EM-4505

The Eimac EM-4505 is a complete radio frequency amplifier designed for installation in a standard 19 inch rack panel. It employs an Eimac 4CX250R tetrode and is intended for use as an intermediate stage in an FM transmitter.

FREQUENCY 122-150 Mc
POWER OUTPUT 30 watts

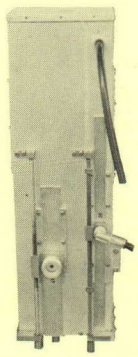
CHARACTERISTICS

ELECTRICAL	
Frequency	122-150 Mc
Power Output	30 watts*
Drive Power Required	1 watt*
Bandwidth	2 Mc at 1.5 db
Modulation	FM
MECHANICAL	
Dimensions:	
Height	13 inches
Width	8½ inches
Depth	26 inches
Input Connector	Type N Female
Output Connector	Type N Female
Cooling	Blower provided

*Depends upon bandwidth required.

TYPICAL POWER SUPPLY REQUIREMENTS

	Voltage	Current
Anode	400 to 800 V*	150 to 250 mA*
Screen	80 to 175 V*	−25 to +25 mA
Grid	−35 to −60 V	−25 to +25 mA
Filament	6.0 V ± 5%	2.6 A



EM-4506

The Eimac EM-4506 is a complete radio frequency amplifier designed for installation on a standard 19 inch panel. It employs an Eimac 4CX1000K tetrode and is intended for use either as an intermediate or the output stage of an FM transmitter.

FREQUENCY 122-150 Mc
POWER OUTPUT 1 kW

CHARACTERISTICS

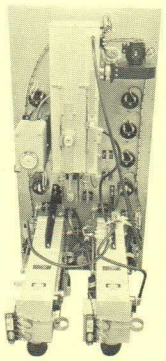
ELECTRICAL	
Frequency	122-150 Mc
Power Output	1 kW
Drive Power Required	30 watts
Bandwidth	2 Mc at 1.5 db
Modulation	FM
MECHANICAL	
Dimensions:	
Height	24 inches
Width	15 inches
Depth	12½ inches
Input Connector	Type N Female
Output Connector	Type LC Female
Cooling	Blower provided

TYPICAL POWER SUPPLY REQUIREMENTS

	Voltage	Current
Anode	3000 V	1.0 A
Screen	250 to 350 V	−100 to +125 mA
Grid	−90 to −120 V	−50 to +0.75 mA
Filament	6.0 V ± 5%	12A max.

NEW PRODUCT

COMPLETE CAVITY AMPLIFIERS



EM-4516

The Eimac EM-4516 is a complete radio frequency amplifier designed for installation in a standard 19 inch rack. It consists of two stages of the EM-4505 with 4CX-250R tetrodes and one stage of the EM-4506 with the 4CX1000K tetrode in a complete package. It is intended for use as a driver amplifier in special FM transmitter applications.

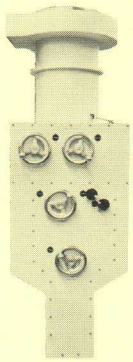
FREQUENCY **120-150 Mc**
POWER OUTPUT **1 kW CW**

CHARACTERISTICS

ELECTRICAL	
Frequency	120-150 Mc
Power Output	1 kW CW
Driver Power Required	1 Watt CW
Bandwidth	2 Mc at 1.5 db
Modulation	FM — CW
MECHANICAL	
Dimensions:	
Height	60 inches
Width	19 inches
Depth	28 inches
Input Connector	Type N Female
Output Connector	Type LC Female
Cooling	Blowers provided

TYPICAL POWER SUPPLY REQUIREMENTS

	Stage 1		Stage 2		Stage 3	
	Voltage	Current	Voltage	Current	Voltage	Current
Anode	400 V	150 mA	750 V	250 mA	3000 V	800 mA
Screen	100 to 200 V	−25 to +25 mA	150 to 250 V	−10 to +40 mA	250 to 350 V	−75 to +75 mA
Grid	−20 to −70 V	−10 mA	−50 to −100 V	−15 mA	−50 to −125 V	−10 mA
Heater/Filament	6.0 V	2.6 A	6.0 V	2.6 A	6.0 V	12.0 A



EM-4507

The Eimac EM-4507 is a complete radio frequency amplifier designed for installation in a special cabinet. It employs an Eimac 3CX10,000A7 zero bias triode in a grounded grid circuit and is intended for use as an output stage of an FM transmitter.

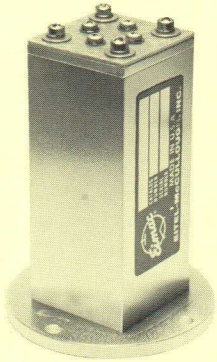
FREQUENCY **122-150 Mc**
POWER OUTPUT **12 kW**

CHARACTERISTICS

ELECTRICAL	
Frequency	122-150 Mc
Power Output	12 kW
Drive Power Required	600 to 800 watts
Bandwidth	2 Mc at 1.5 db
Modulation	FM — CW
MECHANICAL	
Dimensions:	
Height	72 inches
Width	28 inches
Depth	28 inches
Input Connector	Type LC Female
Output Connector	1⅝ inch rigid coax
Cooling:	
Anode	365 CFM at 3.5 inches H_2O
Filament	40 CFM at 2.0 inches H_2O

TYPICAL POWER SUPPLY REQUIREMENTS

	Voltage	Current
Anode	6000 V	3.5 A
Filament	7.5 Vdc	102 A



EM-4515

The Eimac EM-4515 is a cavity oscillator designed for installation in special compact transmitter packages. It uses an Eimac Y-319 planar triode and features ruggedness and excellent frequency stability under varying operating temperatures.

FREQUENCY **1700-1800 Mc**
POWER OUTPUT **2.5 watts**

CHARACTERISTICS

ELECTRICAL	
Frequency	1700-1800 Mc
Power Output	2.5 watts
Stability	.075% −50°F to +150°F
Modulation	CW
MECHANICAL	
Dimensions:	
Height	3.75 inches Maximum
Width	1.5 inches
Depth	1.5 inches
Base Diameter	2.75 inches
Input Connector	None
Output Connector	TNC Female
Cooling	Conduction

TYPICAL POWER SUPPLY REQUIREMENTS

	Voltage	Current
Anode	250 V	60 mA
Grid	Self Bias	
Heater	5.5 V	1.0 A

CUSTOM CAVITY DESIGN

Eimac's Accessory Products Division specializes in designing cavity amplifiers to fit specific customer requirements. Modifications to an existing design, or the development of a whole new amplifier design, can be accomplished in a minimum of time.

Inquire about a cavity amplifier to fit your particular application — from a few watts to kilowatts. It will help if you include the following information:

ELECTRICAL
Input Frequency
Output Frequency
Input Power
Output Power
Tuning Range
Bandwidth
Frequency Stability
Harmonic Output
Modulation
Maximum Input VSWR
Maximum Load VSWR
Pulse Width
Duty Cycle
FM Noise
AM Noise

MECHANICAL
Size and Weight

POWER SUPPLY LIMITS
Input Voltage and Current

ENVIRONMENT
Temperature Range
Vibration
Pressurization Required

Immediate quantity desired
Required delivery

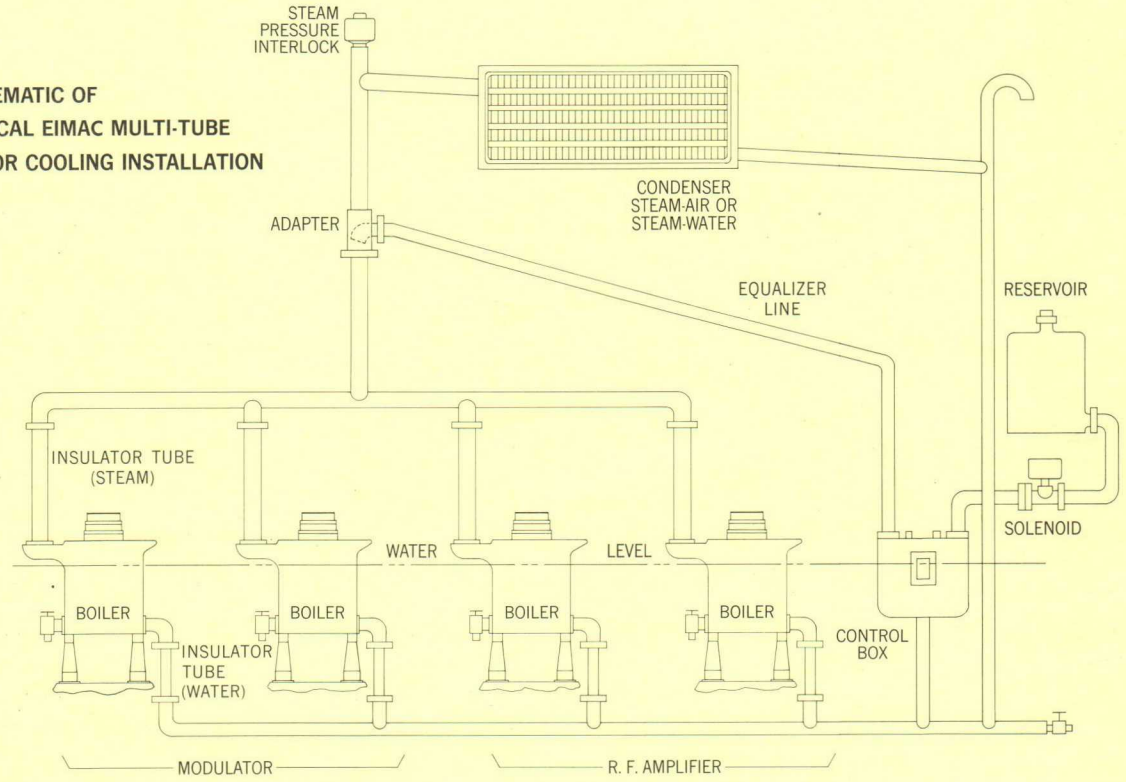
Ultimate quantity desired
Required delivery

NEW PRODUCT

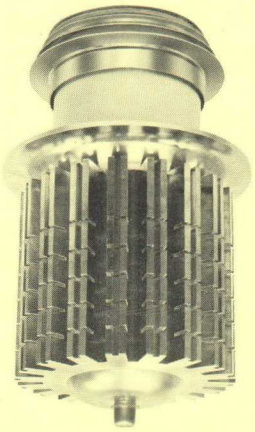
VAPOR-PHASE COOLING ACCESSORIES

In order to take the guess work out of using vapor cooling, Eimac has developed a complete line of accessories to complement its new series of vapor-cooled tubes. All the components labeled in the system below are available from Eimac.

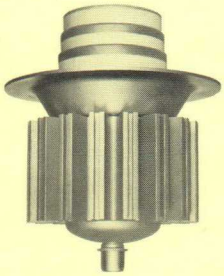
SCHEMATIC OF TYPICAL EIMAC MULTI-TUBE VAPOR COOLING INSTALLATION



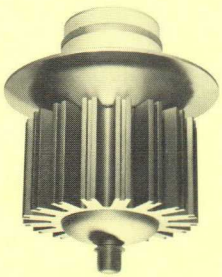
For more information on how this cooling technique can improve the performance of your equipment, write for a free copy of Application Bulletin Number 11, "Practical Application of Vapor-Phase Cooling." Also available from Eimac is application engineering assistance in planning vapor-cooled systems. The Eimac representatives listed in this catalog can put you in touch with the same people who produced the first completely integrated vapor-phase cooling packages.



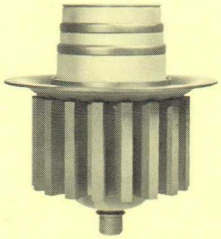
4CV100,000C
(Page 57)



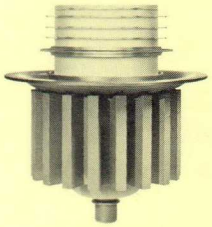
4CV35,000A
(Page 57)



3CV30,000A3
(Page 48)

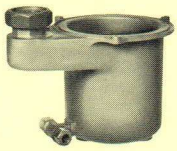


4CV20,000A
(Page 57)



4CV8000A
(Page 57)

VAPOR-PHASE COOLING ACCESSORIES



BOILER

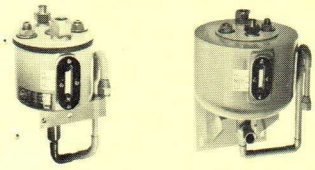
Boiler design must be compatible with tube design to realize the full potential of a vapor-cooled tube. The BR-101, BR-200 and BR-300 boilers are complete with inlet and outlet connections, anti-corrosion target and mounting provisions. They are used with Eimac 8- to 100-kilowatt vapor-cooled tubes.

BOILER	TUBE
BR-101	4CV8000A
BR-200	4CV20,000A 3CV30,000A3 4CV35,000A
BR-300	4CV100,000C

BOILER

This special boiler for the 4CV100,000C uses a "steam-out-the-bottom" arrangement. It is designed for applications where it is desirable to keep all plumbing below the tube. This system requires a small pump to keep a constant water level.

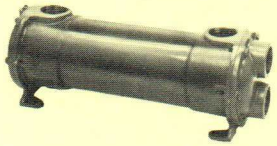
BOILER	TUBE
BR-310	4CV100,000C



CONTROL BOX

The Eimac CB-102 and CB-202 Control Boxes serve as level monitoring devices and as reservoirs. They contain an overflow siphon and two water-level switches for activating an alarm system and for equipment shut-down in case of low water level.

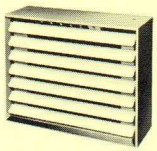
CONTROL BOX	TUBE
CB-102	4CV8000A
CB-202	4CV20,000A 3CV30,000A3 4CV35,000A 4CV100,000C



CONDENSER

Reliable vapor-to-water condensers for use with secondary water coolant are available in any size from Eimac. The condensers are constructed of heavy-duty brass. Standard sizes are listed here.

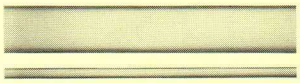
CAPACITY
8 kW
20 kW
35 kW
75 kW
100 kW



CONDENSER

Forced-air cooled vapor condensers are equipped with fans and motors and are available for systems where cooling water is at a premium. These are available in any size; standard sizes are listed here.

CAPACITY
8 kW
20 kW
35 kW
75 kW
100 kW



INSULATOR TUBE

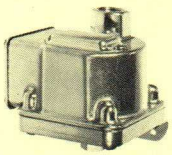
Heavy Pyrex glass tubing, matching the inlet and outlet connectors on the Eimac boilers, is also available. It serves as water or steam plumbing as well as electrical insulation. Standard length is 24 inches. Special lengths can be made to order.

BOILER	STEAM LINE	WATER LINE
BR-101	1¾ in.	½ in.
BR-200	2½ in.	½ in.
BR-300	3½ in.	¾ in.

ADAPTER FITTING

An adapter to make the transition from the Pyrex steam tube to copper pipe.

SIZES	BOILER
1¾ in.	BR-101
2½ in.	BR-200
3½ in.	BR-300 BR-310



STEAM PRESSURE INTERLOCK

Used to sense steam pressure and to remove power from the tube in the event of excessive pressure. The unit is set for 0.5 pounds per square inch above atmospheric pressure.

EQUALIZER FITTING (not shown)

A special Tee fitting for connecting the equalizer line to the steam line.

OPTIONAL ACCESSORIES

SOLENOID WATER VALVE

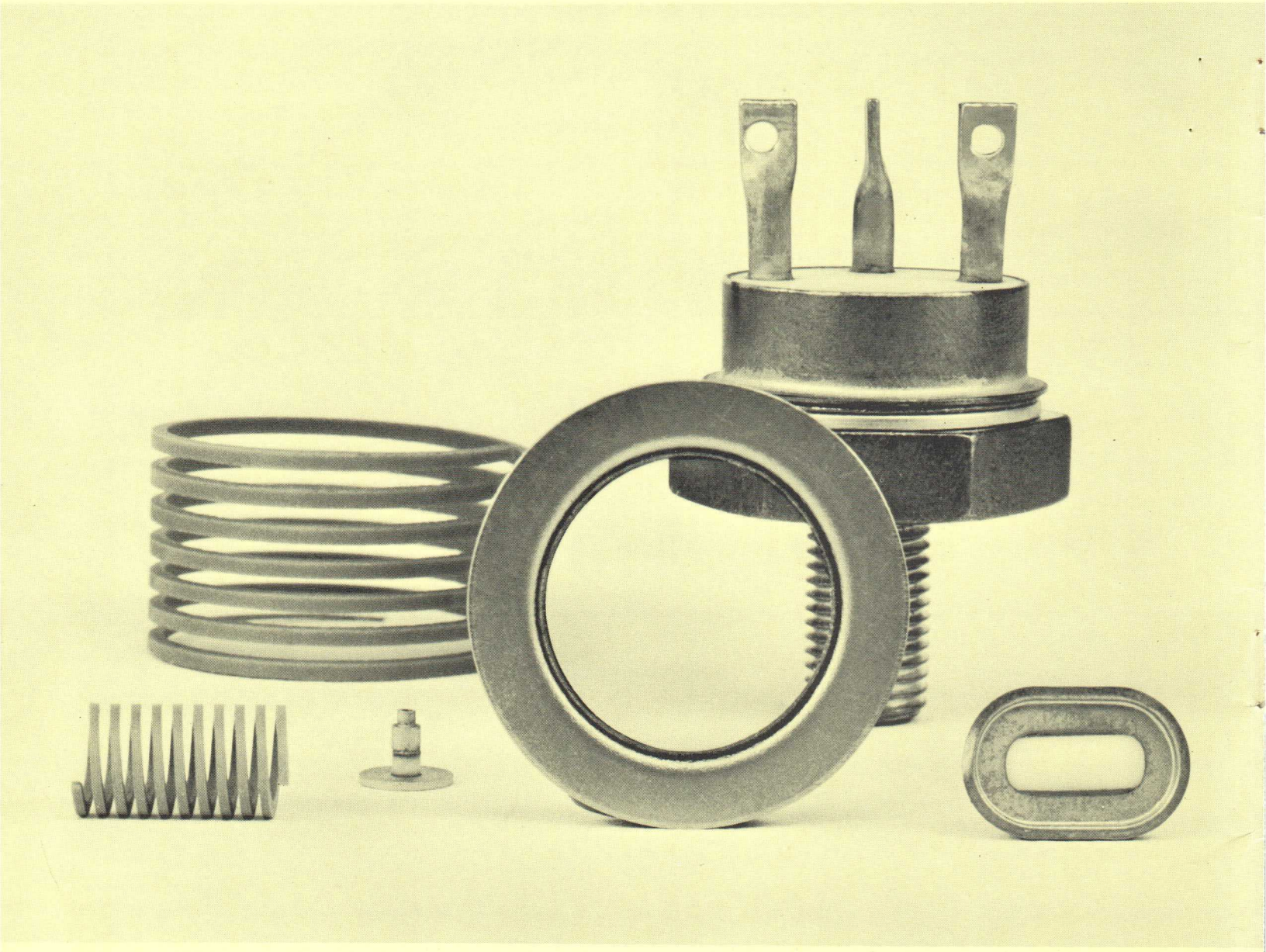
SIZE
½" Pipe

RESERVOIR

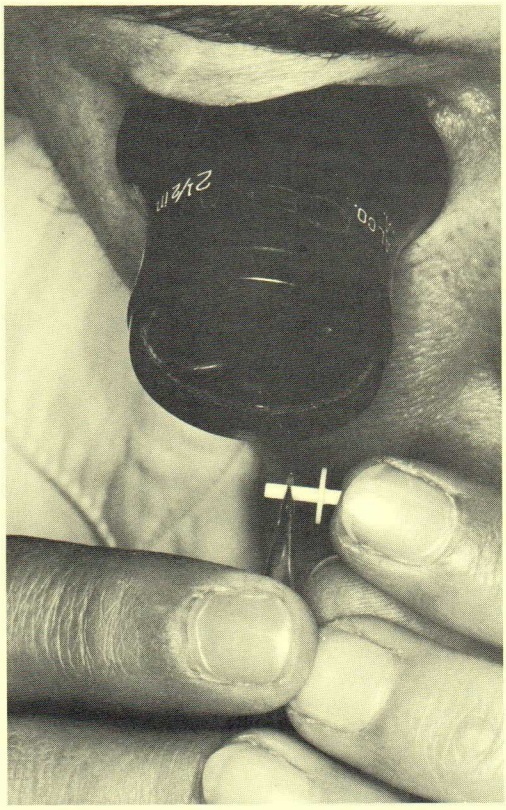
RESERVOIR	CAPACITY
RE-100	1 pint
RE-200	1 quart
RE-300	1 gallon

CERAMIC-METAL SEALS

In 1962, Eitel-McCullough announced the availability of vacuum-tube-quality ceramic-metal seals for non-vacuum-tube applications. By the end of 1962, products such as connector inserts, semiconductor enclosures, rocket-ignitor shells and microwave windows had been delivered in quantity.



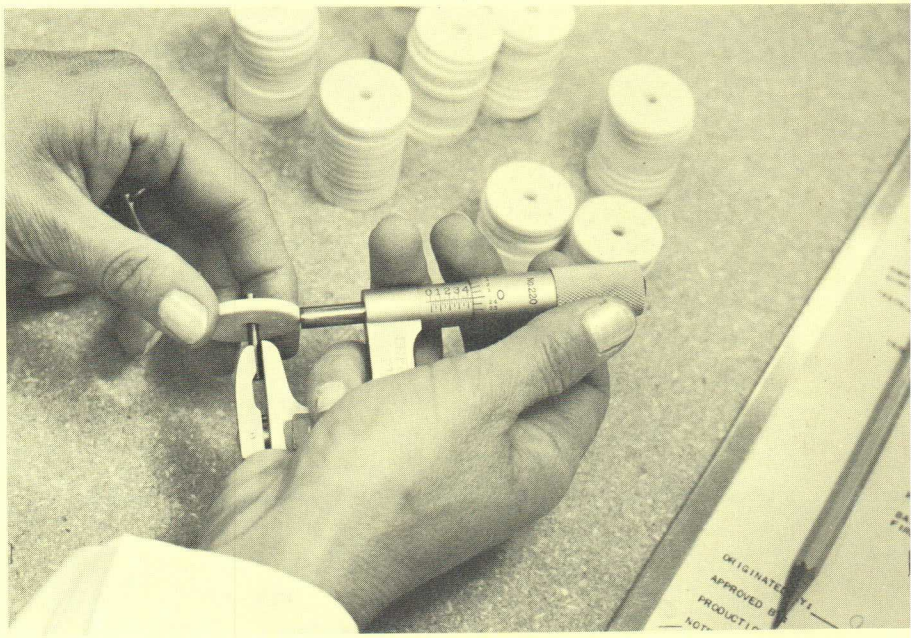
CERAMIC-METAL SEALS



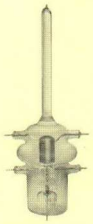
Typical examples of Eimac's capability include the following:

- Pure alumina, in the form of Sapphire, brazed at 1000°C to a metal flange. The braze material was copper or copper-silver eutectic. The flange material was a nickel-iron alloy, stainless steel, or copper. The result was a vacuum-tight braze with the Sapphire un-tinted by any of the operations.
- Thermocouples, of iron/constantan or chromel/alumel, sealed in a vacuum-tight assembly which included a sealing ring which could be heliarced to a vacuum flange.
- A gun structure for the Astron Accelerator made from a series of ceramic cylinders, and metal assemblies, forming a structure 26 inches high and 16 inches in diameter.
- A high-temperature connector with a stainless-steel body, containing a coaxial fitting plus two straight-pin feedthroughs, brazed at 850°C into a vacuum-tight assembly.
- The electrical boundary of an rf circuit, consisting of a platinum surface sintered to a ceramic sub-assembly for operation at 1000°C in a halogen-radical atmosphere.

These are a few of the more unusual assemblies we've successfully produced. We invite inquiries into solutions to your particular problem. A free 16-page brochure, "Eimac Ceramic-Metal Seals," is available on request.

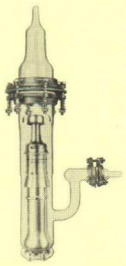


OTHER PRODUCTS



100 IG IONIZATION GAUGE

Essentially a triode vacuum tube for measuring pressures from 10^{-3} to less than 10^{-8} mm of mercury, constructed of "hard" glass for sealing directly to nonex glass vacuum systems.



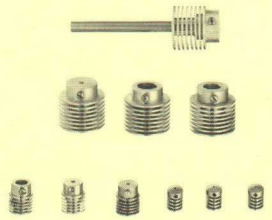
HV-1 DIFFUSION PUMP

A fast, triple jet, air-cooled vacuum pump of the oil-diffusion type. When used with a suitable forepump and cold trap it is capable of reaching an ultimate vacuum better than 10^{-7} mm of mercury.

Maximum Forepressure	0.02 mm Hg
Pumping Speed (without baffle)	67 liters per second ($4x10^{-4}$ to $4x10^{-6}$ mm Hg)
Heater Voltage	100 to 110 volts
Heater Current	1.7 amperes
Net Weight	6 pounds
Maximum Length	25 inches

HEAT DISSIPATING CONNECTORS

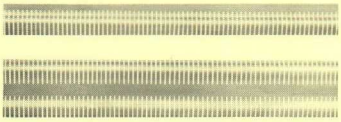
Eimac HR Heat-Dissipating Connectors are used to make electrical connections to the plate and grid terminals of Eimac Tubes, and at the same time, provide efficient heat transfer from the tube element and glass seal to the air. These connectors are machined from solid dural rod and are supplied with the necessary set screws.



TYPE	Length	Dia.	Hole Dia.
HR-1	11/16″	1/2″	.052″
HR-2	11/16″	1/2″	.062″
HR-3	11/16″	1/2″	.072″
HR-4	7/8″	3/4″	.102″
HR-5	7/8″	3/4″	.127″
HR-6	7/8″	3/4″	.367″
HR-7	1-11/32″	1-3/8″	.127″
HR-8	1-11/32″	1-3/8″	.575″
HR-9	4-11/32″	1-3/8″	.569″
HR-10	1-11/32″	1-3/8″	.510″

RECOMMENDED CONNECTORS FOR USE WITH EACH EIMAC TUBE TYPE

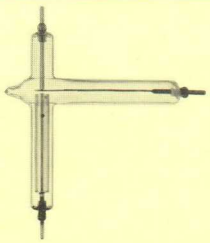
TUBE	Plate Connector	Grid Connector	TUBE	Plate Connector	Grid Connector
2-25A	HR-1	....	25T	HR-1	....
2-50A	HR-3	....	35T	HR-3	....
2-150D	HR-6	....	35TG	HR-3	HR-3
2-240A	HR-6	....	75TH-TL	HR-3	HR-2
2-450A	HR-8	....	100TH-TL	HR-6	HR-2
2-2000A	HR-8	....	VT127A	HR-3	HR-3
3-1000Z	HR-8	....	250TH-TL	HR-6	HR-3
3C24	HR-1	HR-1	250R	HR-6	....
4-65A	HR-6	....	304TH-TL	HR-7	HR-6
4D21/4-125A	HR-6	....	450TH-TL	HR-8	HR-8
5D22/4-250A	HR-6	....	592/3-200A3	HR-10	HR-5
4-400A	HR-6	....	750TL	HR-8	HR-8
4-1000A	HR-8	....	866A	HR-8	....
4E27A/5-125B	HR-5	....	872A	HR-8	....
4PR60A	HR-8	....	1000T	HR-9	HR-9
6C21	HR-8	HR-8	1500T	HR-8	HR-8
KY21A	HR-3	....	2000T	HR-8	HR-8
RX21A	HR-3	....	8020(100R)	HR-8	....



PREFORMED CONTACT FINGER STOCK

Eimac Preformed Finger Stock is a prepared strip of spring material slotted and formed into a series of fingers designed to make a sliding contact. It is especially suitable for making connections to tubes with coaxial terminals or to moving parts, such as long-line and cavity circuits or screen-room doors. Eimac finger stock is available in 9 different shapes and sizes, three of which incorporate "spooned" contact fingers. All sizes come in standard 36 inch lengths.

Type	Finger Radius (inches)	Finger Width (inches)	Slot Width (inches)	Slot Depth (inches)	Comments
CF-100	1/16	1/8	0.040	9/32	spooned
CF-200	1/16	1/8	0.040	9/32	double-edged
CF-300	13/64	1/8	0.040	19/32	finger tip has reverse radius
CF-400	13/64	1/8	0.040	35/64	double-edged
CF-500	15/32	1/8	0.040	7/8	finger tip has reverse radius
CF-600	15/32	1/8	0.040	29/32	double-edged with reverse tip radii
CF-700	1/16	1/8	0.040	9/32	spooned
CF-800	1/16	1/8	0.040	15/32	spooned and bent
CF-900	0.030	1/16	0.020	15/64	smallest fingers



VACUUM SWITCHES

VS-2, VS-4, VS-5, VS-6

Eimac offers four vacuum switches intended primarily for r-f service. All have similar characteristics and similar ratings, though each differs from the others in some respect. They are rated at 20 kilovolts peak r-f in the "open" position. In the "closed" position, they can carry 7.5 amperes r-f current at frequencies to 15 megacycles, and 5 amperes from 15 to 30 megacycles. They are designed to be activated by a separate 12- or 24-volt coil, also available from Eitel-McCullough, Inc. The Power Grid Tube Marketing Department at the San Carlos offices should be contacted if additional data or specific recommendations are desired.

EITEL-McCULLOUGH, INC.
SAN CARLOS • CALIFORNIA

LITHO IN U.S.A.—3-63-KO-15