EIMAC TUBES

Eimac®

QUICK REFERENCE CATALOG

BIMAC
TUBES

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Contents


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, both AM and FM. They powered some of the earliest UHF-TV transmitters, today power most European UHF-TV stations and many in the U.S. When the United States and its allies, in one of mankind's greatest communications achievements, circled the earth with a high-speed defense microwave tropospheric scatter network, Eimac power klystrons powered 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. Early 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 and airborne communication equipment.

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.

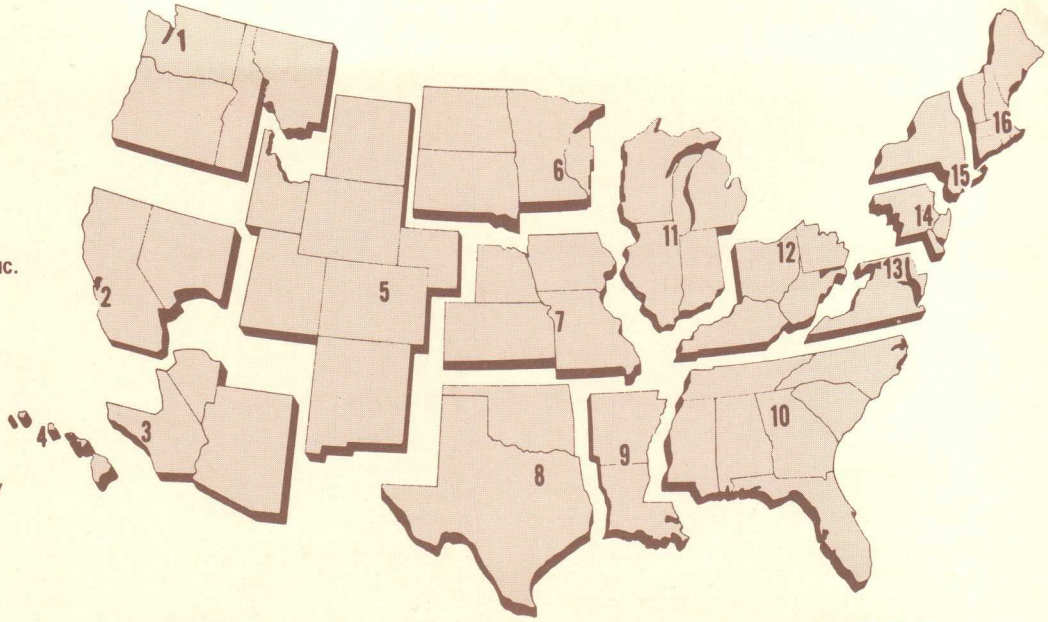
At Belmont, California, near the San Carlos plant, is the Eimac High Power Microwave Laboratory, devoted solely to the development of velocity-modulated electron tubes for the ever higher frequencies and powers demanded by man's advancing technology.

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.

EIMAC FIELD SALES ENGINEERS



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TUBE INDEX

MICROWAVE TUBE DIVISION

REFLEX KLYSTRONS

TRAVELING WAVE TUBES

VOLTAGE TUNABLE MAGNETRONS

HIGH POWER MICROWAVE TUBE DIVISION

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C BAND CW

S BAND PULSE

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L BAND PULSE

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UHF PULSE

UHF PULSE

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TETRODES

PENTODE

PULSE MODULATORS

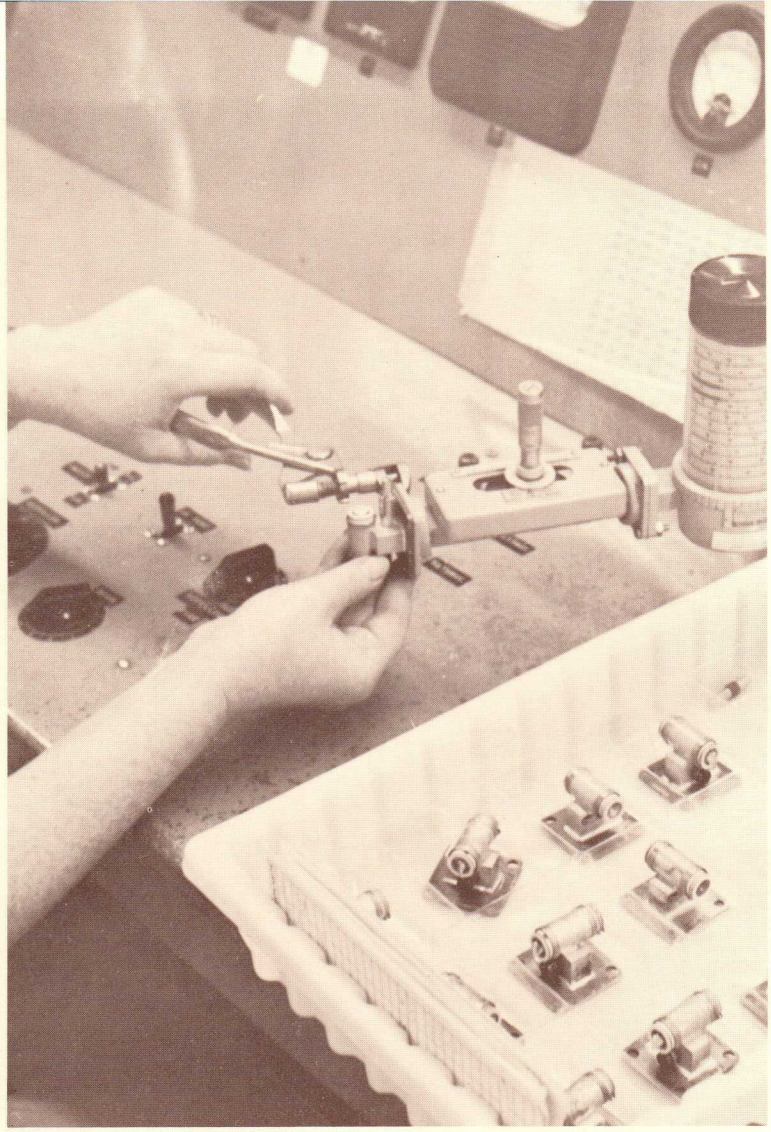
SOCKETS

SOCKETS

CHIMNEYS

OTHER PRODUCTS

MICROWAVE TUBE DIVISION



Eitel-McCullough, Inc. manufactures a growing line of small-sized, low-power microwave generators. These small, rugged, ceramic and metal tubes are designed to meet the demands of space-age microwave electronics. Eimac's microwave line includes:

- REFLEX KLYSTRONS
- TRAVELING WAVE TUBES
- VOLTAGE TUNABLE MAGNETRONS
- ADVANCED MICROWAVE DEVICES

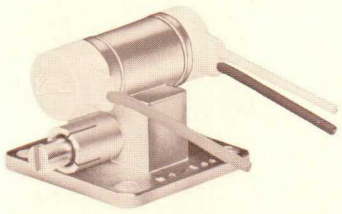
One of Eimac's advanced design techniques is to rigidly support the internal-electrode tube with stacked ceramic components. This provides for stable, efficient tube operation under severe environmental conditions of heat, humidity, high altitude, shock, vibration and acceleration.

Eimac microwave tubes have proved their performance in transmitters and receivers for multi-channel, point-to-point, communications systems — missile and aircraft guidance — aircraft navigation — radar beacon augmenters — electronic countermeasure systems — electronic test equipment.

Eimac's Microwave Division has recently expanded its program for new microwave tubes and modifications of existing products to meet specialized customer needs. Many experimental tubes presently under development will soon be placed in production. Listed as X-numbered items, these tubes are now available on a limited basis.

◗ Indicates new product.

REFLEX KLYSTRONS



1K20XS

TUNING RANGE **8.5 - 9.2 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

MAXIMUM RATINGS

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

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

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

1K20XK

TUNING RANGE **9.2 - 10.0 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

MAXIMUM RATINGS

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

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

TYPICAL OPERATION

Mode	5¾	5¾
Frequency	9.60	9.60 Gc
Resonator Voltage	300	350 Vdc
Output Power	70	90 mW
Cathode Current	40	50 mAdc
Repeller Voltage	−170	−155 Vdc
3-db Bandwidth	35	35 Mc
Modulation Sens.	1.7	1.7 Mc/v

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. The long-life tuner facilitates motor-tuning, providing a tuning rate of approximately 150 Mc per turn.

1K20XD

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

MAXIMUM RATINGS

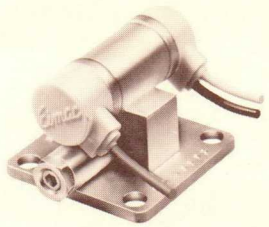
RESONATOR VOLTAGE	350 Vdc
CATHODE CURRENT	55 mAdc
REPELLER VOLTAGE	−500 Vdc

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	1.3 inches

TYPICAL OPERATION

Mode	5¾	5¾
Frequency	10.35	10.35 Gc
Resonator Voltage	300	350 Vdc
Output Power	50	75 mW
Cathode Current	45	55 mAdc
Repeller Voltage	−165	−150 Vdc
3-db Bandwidth	30	30 Mc
Modulation Sens.	2.0	2.0 Mc/v



1K20XN

The 1K20XN 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 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

MAXIMUM RATINGS

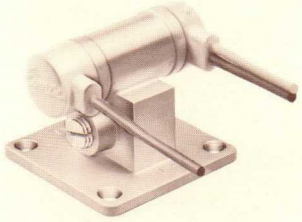
RESONATOR VOLTAGE	400 Vdc
CATHODE CURRENT	70 mAdc
REPELLER VOLTAGE	−500 Vdc

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	1.3 inches

TYPICAL OPERATION

Mode	5¾	4¾
Frequency	10.6	10.6 Gc
Resonator Voltage	400	400 Vdc
Output Power	100	200 mW
Cathode Current	65	65 mAdc
Repeller Voltage	−130	−290 Vdc
3-db Bandwidth	40	25 Mc
Modulation Sens.	2.0	0.8 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 **±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

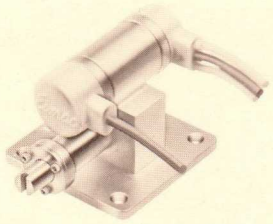
MAXIMUM RATINGS

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

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.

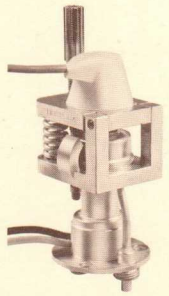
TUNING RANGE	**9.2 to 9.6 Gc**
MINIMUM OUTPUT	**20 mW**
COOLING	**Conduction**

MAXIMUM 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



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)	10 g

CHARACTERISTICS

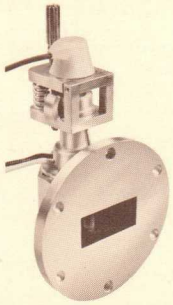
Cathode: Oxide-coated, unipotential	
Heater: Voltage	6.3 volts
Current	0.7 to 1.0 ampere
RF Output	Miniature coaxial jack
Net Weight	4.2 ounces
Maximum Depth	1.19 inches
Maximum Width	1.32 inches
Maximum Length	3.38 inches

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



1K015CG

The 1K015CG is a waveguide-output version of the 1K015CA with identical electrical characteristics. It is a metal and ceramic, ruggedized, internal-cavity reflex klystron designed for local oscillator service.

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)	10 g

CHARACTERISTICS

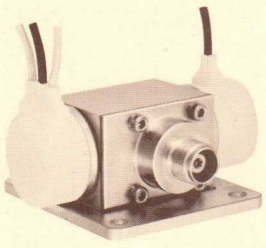
Cathode: Oxide-coated, unipotential	
Heater: Voltage	6.3 volts
Current	0.7 to 1.0 ampere
RF Output	RG-50/U waveguide
Net Weight	17.5 ounces
Maximum Depth	1.63 inches
Maximum Width	3.13 inches
Maximum Length	5.25 inches

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



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

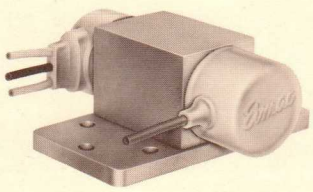
Cathode: Oxide-coated, unipotential	
Heater: Voltage	6.3 volts
Current	1.0 to 1.5 amperes
RF Output	Insulated TNC jack
Net Weight	8.5 ounces
Maximum Depth	1.13 inches
Maximum Width	2.50 inches
Maximum Length	2.51 inches

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	2.73 inches
Maximum Length	2.76 inches

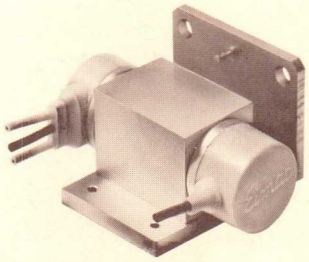
MAXIMUM RATINGS

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

REFLEX KLYSTRONS



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

MAXIMUM RATINGS

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

CHARACTERISTICS

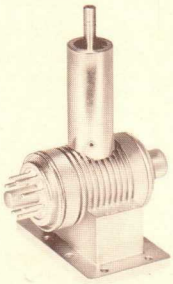
Cathode: Oxide-coated, unipotential	
Heater: Voltage	6.3 volts
Current	1.0 to 1.5 amperes
RF Output	Half-weight waveguide
Net Weight	9.0 ounces
Maximum Depth	1.58 inches
Maximum Width	2.02 inches
Maximum Length	2.73 inches

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

➧ X1079
TUNABLE 1K75 SERIES

Providing the first ruggedized, tunable C-band reflex klystron capable of missile-type environments, Eimac offers a tunable version of the proved 1K75 series. These low-noise tubes are designed for a tunable bandwidth of 400 Mc and can be centered anywhere in the 4 to 6 Gc range on quantity orders. Adapted from the higher powered 1K75 series, this new tube type is designated as the X1079. Producing 100 mW minimum output power, the X1079 is operated even more conservatively than its predecessor, which is currently exhibiting in excess of 5000 hours life. Where the requirement is for a rugged, tunable C-band oscillator with long life built in, the X1079 series will be of special interest.



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

MAXIMUM RATINGS

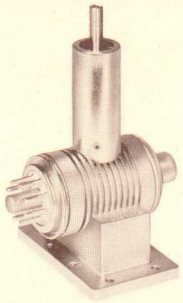
RESONATOR VOLTAGE	1000 Vdc
CATHODE CURRENT	110 mAdc
REPELLER VOLTAGE	−750 Vdc

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

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

MAXIMUM RATINGS

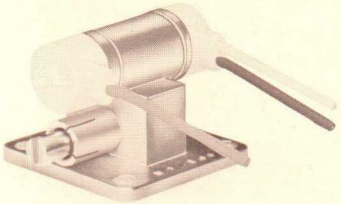
RESONATOR VOLTAGE	1000 Vdc
CATHODE CURRENT	110 mAdc
REPELLER VOLTAGE	−750 Vdc

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

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



➧ X1075

This ruggedized, ceramic and metal tube was designed specifically for radar local oscillator service. Featuring brazed-joint construction and linear mechanical tuning, the X1075 is easily adapted to motor-tuning for 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

MAXIMUM RATINGS

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

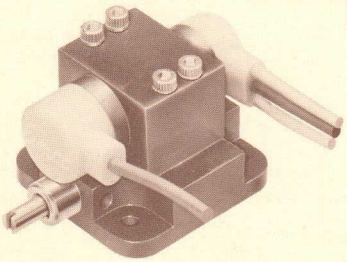
CHARACTERISTICS

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	2.3 inches
Width	1.6 inches
Depth	1.4 inches

TYPICAL OPERATION

Frequency	9.05	9.05 Gc
Resonator Voltage	250	400 Vdc
Output Power	30	100 mW
Cathode Current	20	40 mAdc
Repeller Voltage	−65	−120 Vdc
3-db Bandwidth	40	40 Mc
Modulation Sens.	1.5	1.5 Mc/v

REFLEX KLYSTRONS



X1077 SERIES

The X1077 is a ruggedized, ceramic and metal reflex klystron. It is especially well suited for parametric pump and local oscillator service which demands long life, reliable operation and a high degree of frequency stability. This tube is also suitable for use in commercial common carrier equipment. A tunable frequency range of 500 Mc and minimum output power of 50 mW characterize the X1077 series tubes.

TUNING RANGE	**10.5 to 13.5 Gc**
MINIMUM OUTPUT	**50 mW**
COOLING	**Conduction**

MAXIMUM OPERATING ENVIRONMENT

Maximum Ambient	100 °C
Maximum Altitude	No limit

MAXIMUM RATINGS

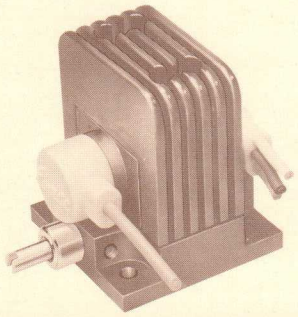
RESONATOR VOLTAGE	450 Vdc
CATHODE CURRENT	50 mAdc
REPELLER VOLTAGE	−750 Vdc

CHARACTERISTICS

Cathode: Oxide-coated, unipotential	
Heater: Voltage	6.3 volts
Current	0.7 ampere
RF Output	WR-75 waveguide
Net Weight	4.5 ounces
Maximum Length	2.25 inches
Maximum Width	1.5 inches
Maximum Depth	1.25 inches

TYPICAL OPERATION

Mode	5¾
Frequency	12.0 Gc
Resonator Voltage	400 Vdc
Cathode Current	40 mAdc
Repeller Voltage	−200 Vdc
Output Power	65 mW



X1078

The X1078 is a ruggedized, ceramic and metal reflex klystron designed to operate under military environmental conditions. Gridless gun optics assure low-noise characteristics. The X1078 is especially recommended for parametric amplifier applications where cascade or multiple pumping requires ½ watt of power. A minimum of 500 Mc tuning is provided by each tube of this series.

TUNING RANGE	**10.5 to 13.5 Gc**
MINIMUM OUTPUT	**500 mW**
COOLING	**Forced Air**

MAXIMUM OPERATING ENVIRONMENT

Maximum Ambient	100 °C
Maximum Altitude	No limit

MAXIMUM RATINGS

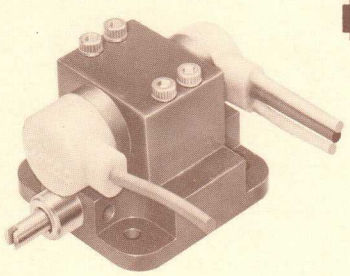
RESONATOR VOLTAGE	800 Vdc
CATHODE CURRENT	120 mAdc
REPELLER VOLTAGE	−1000 Vdc

CHARACTERISTICS

Cathode: Oxide-coated, unipotential	
Heater: Voltage	6.3 volts
Current	0.7 ampere
RF Output	WR-75 waveguide
Net Weight	5.5 ounces
Maximum Length	2.25 inches
Maximum Width	1.5 inches
Maximum Depth	1.21 inches

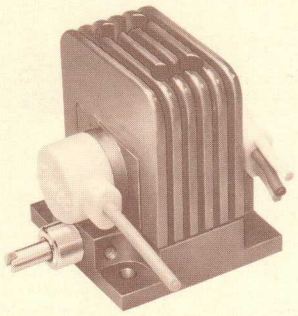
TYPICAL OPERATION

Mode	3¾
Frequency	12.0 Gc
Resonator Voltage	750 Vdc
Cathode Current	100 mAdc
Repeller Voltage	−600 Vdc
Output Power	700 mW



X1106 SERIES IN DEVELOPMENT

TUNING RANGE	**10.5 to 13.5 Gc**
MINIMUM OUTPUT	**100 mW**
COOLING	**Conduction**

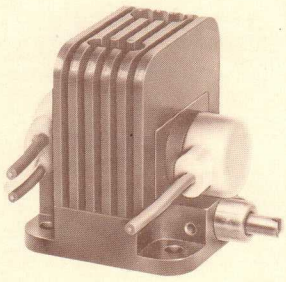


X1107 SERIES IN DEVELOPMENT

TUNING RANGE	**10.5 to 13.5 Gc**
MINIMUM OUTPUT	**1.0 W**
COOLING	**Forced Air**

Currently in development, the X1106 and X1107 series tubes will be available in mid-1962. Both types feature ruggedized, metal and ceramic construction and are intended for applications where severe environments are encountered. In both series of tubes, a minimum tunable frequency range of 500 Mc is provided with a single-screw tuner.

The X1106 operates with a resonator voltage of 400 Vdc and draws 40 mAdc maximum cathode current. The X1107 operates at 750 Vdc and draws 100 mAdc maximum cathode current. Both the X1106 and the X1107 will feature a life warranty of 1000 hours, even when operated under severe environmental conditions.



X1122 SERIES IN DEVELOPMENT

TUNING RANGE	**10.5 to 13.5 Gc**
MINIMUM OUTPUT	**1.0 W**
TRI-MODAL	

Designed specifically for commercial applications, the X1122 reflex klystron series is well suited for microwave relay equipment. Low noise and good thermal stability characterize this metal and ceramic series of tubes. Design innovations such as the one-piece external cavity/mounting flange, are the reasons why Eimac can produce these tubes with economy without sacrifice of quality or reliability.

The X1122 can be operated at 1 watt or 100 milliwatts for transmitter service or at reduced output power for local oscillator service.

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

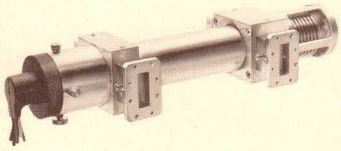
Cathode: Oxide, unipotential
Heater:
Voltage 6.3 volts
Current 0.6 ampere

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 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

TWT AND VTM



X1100

The X1100 traveling wave tube was designed specifically for microwave communications service. An extensive development program successfully concluded with a PPM focusing mount which gives optimum tube performance with complete tube/mount interchangeability. Available now in limited quantities, the X1100 offers outstanding performance, long life and low cost.

FREQUENCY RANGE 5.9 - 7.5 Gc

OUTPUT POWER 5 W (Linear)
10 W (Saturated)

SMALL SIGNAL POWER GAIN 43 db

CHARACTERISTICS

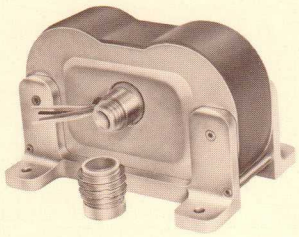
Cathode: Oxide, unipotential	
Heater:	
Voltage	6.3 volts
Current	0.75 ampere
Focusing: Interchangeable Periodic Permanent Magnet Mount	
Noise Figure	28 db
RF Connections:	
Input	Waveguide
Output	Waveguide
Maximum Dimensions (tube and mount):	
Length	15.25 inches
Width	3.25 inches
Height	6.0 inches
Cooling	Conduction

MAXIMUM RATINGS

ANODE VOLTAGE	3000 Vdc
ANODE CURRENT	0.5 mAdc
HELIX VOLTAGE	2850 Vdc
HELIX CURRENT	3.0 mAdc
FOCUS VOLTAGE	−50 Vdc
FOCUS CURRENT	0.5 mAdc
DISSIPATION	100 W

TYPICAL OPERATION

Frequency	5.9 - 7.5 Gc
Anode Voltage	2900 Vdc
Anode Current	0.02 mAdc
Helix Voltage	2550 Vdc
Helix Current	40 uAdc
Focus Voltage	−15 Vdc
Focus Current	0.02 mAdc
Collector Voltage	2800 Vdc
(depressed)	1600 Vdc
Collector Current	35 mAdc
Output Power	5 W
Small Signal Gain	43 db



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 Convection

CHARACTERISTICS

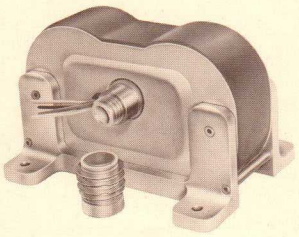
Cathode: Unipotential, matrix	
Heater:	
Voltage (ac or dc)	6.3 volts
Current	0.8 ampere
RF Output: Type N or TNC Female	
Net Weight (including magnet and r f circuitry)	4 lbs. max.
Maximum Height	3 inches
Maximum Width	2.125 inches
Maximum Length	4.875 inches

MAXIMUM RATINGS

ANODE VOLTAGE	2000 Vdc
CATHODE CURRENT	20 mAdc
DISSIPATION	40 W
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.

ELECTRONIC TUNING RANGE 1200 - 2200 Mc

MINIMUM OUTPUT 100 mW

COOLING Forced Air

CHARACTERISTICS

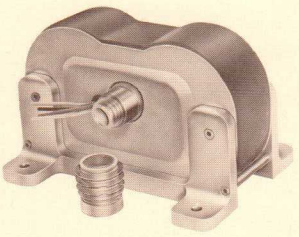
Cathode: Unipotential, matrix	
Heater:	
Voltage (ac or dc)	6.3 volts
Current	0.8 ampere
RF Output: Type N or TNC Female	
Net Weight (including magnet and rf circuitry)	4 lbs. max.
Maximum Height	3 inches
Maximum Width	2.125 inches
Maximum Length	4.875 inches

MAXIMUM RATINGS

ANODE VOLTAGE	1500 Vdc
CATHODE CURRENT	25 mAdc
DISSIPATION	40 W
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 (including magnet and rf circuitry)	4 lbs. max.
Maximum Height	3 inches
Maximum Width	2.125 inches
Maximum Length	4.5 inches

MAXIMUM RATINGS

ANODE VOLTAGE	2300 Vdc
CATHODE CURRENT	35 mAdc
DISSIPATION	70 W
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

HIGH POWER MICROWAVE TUBE DIVISION

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 principal products of the division are CW and pulse amplifier klystrons. High power traveling wave amplifier tubes will be added to the product line in 1962.

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, linear accelerators and radar astronomy.

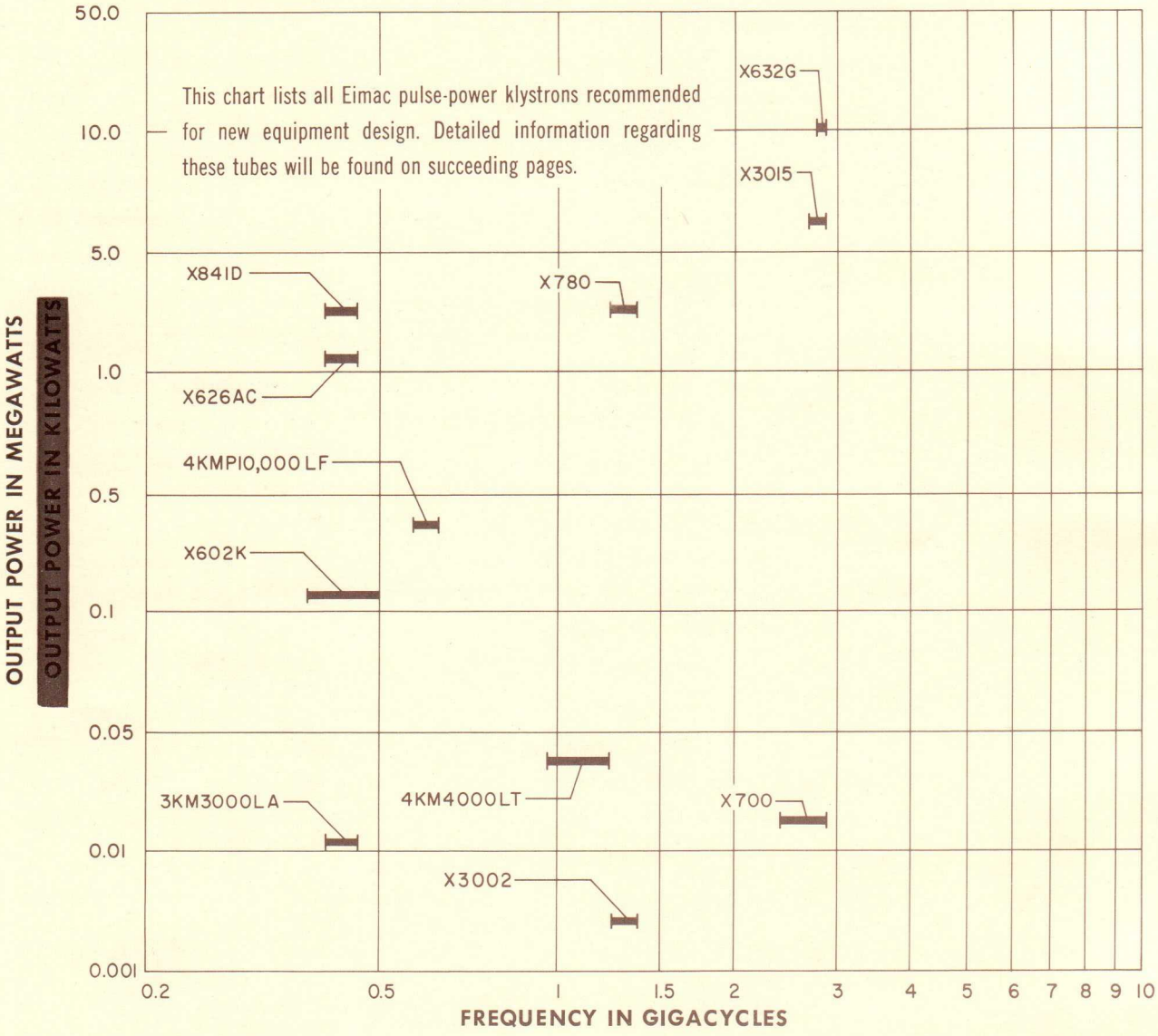
Eimac's High Power Microwave Tube Division was strengthened in 1961 by two events which will have far-reaching effects in 1962 and in the years to come.

First, the High Power Microwave Tube Laboratory was established in its own facility at Belmont, California. This laboratory, isolated from routine manufacturing operations, is staffed by an outstanding group of tube engineers and craftsmen with the single responsibility for development of new microwave tubes at ever higher powers and higher frequencies. In the short time the laboratory has been in existence, it has been responsible for several outstanding achievements. One of these is the power amplifier klystron to be used in the satellite communications system, Project Relay.

Second, the High Power Microwave Tube Division's production facilities and administrative offices were moved from San Bruno, California to a newly constructed building at the Eimac headquarters plant in San Carlos, California. Because of more modern facilities in the new location and improved communications with other Eimac operations, the High Power Microwave Tube Division is now able to function more efficiently and thus provide better service to its customers.

➧ Indicates new product.

PULSE POWER KLYSTRONS



POWER KLYSTRON CATALOG NUMBERING SYSTEM

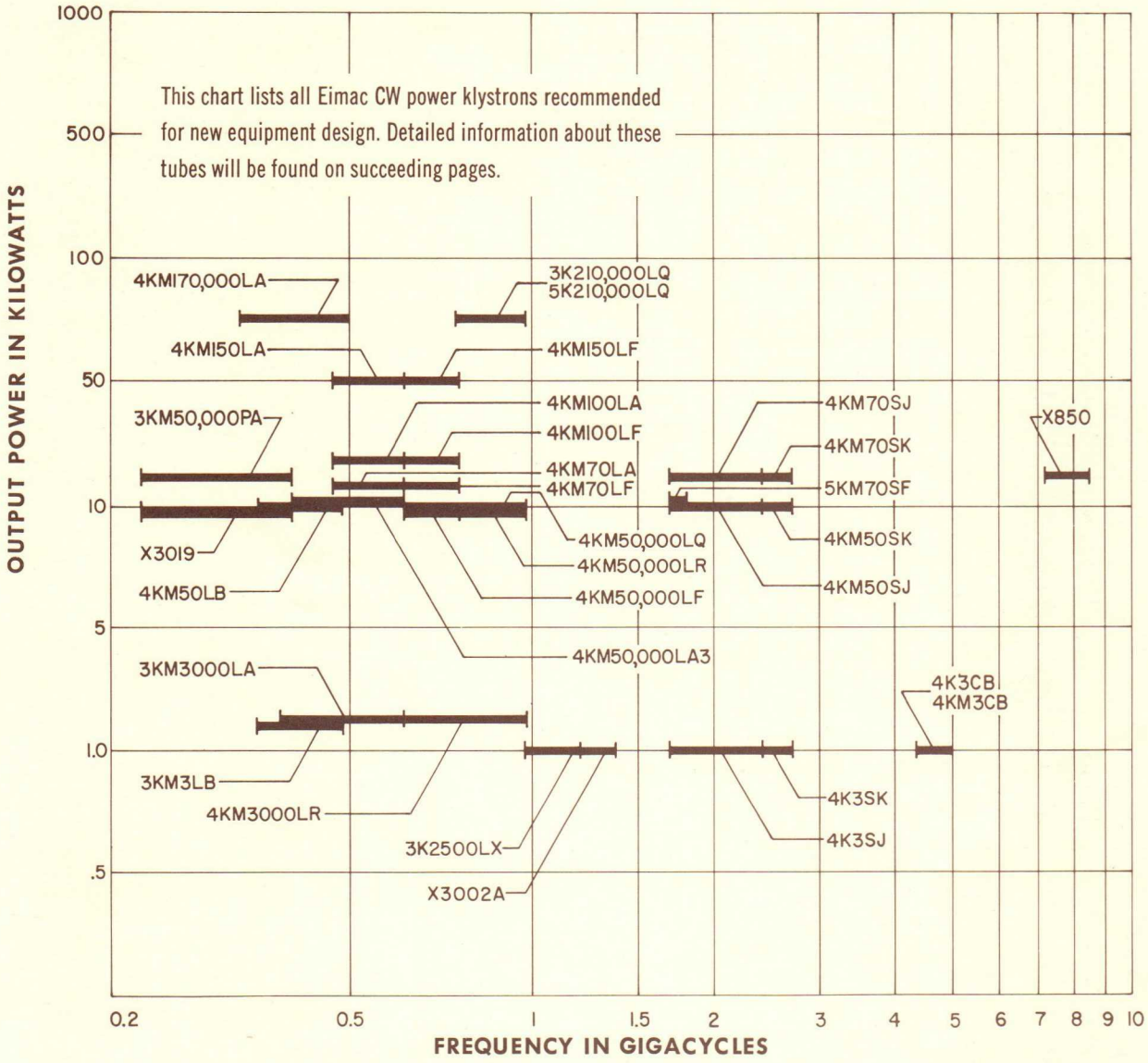
The catalog numbers for Eimac Power Klystrons have been designed to convey maximum information regarding the klystron. Here is an example:

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.

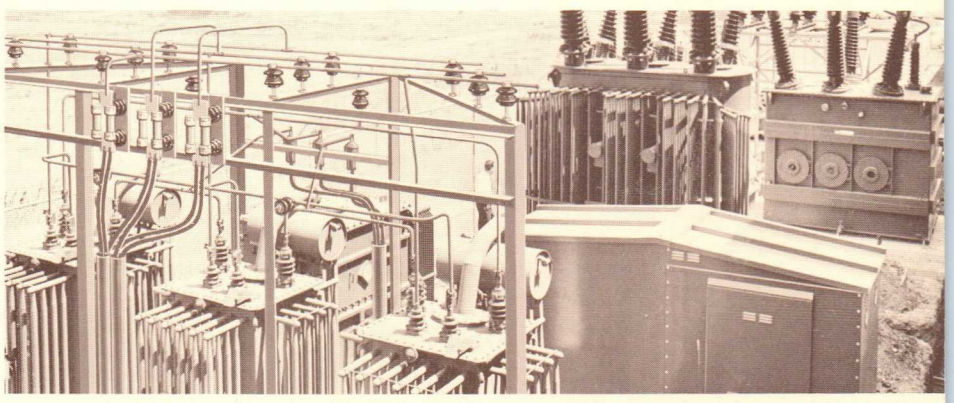
Eimac klystrons described by the letter X followed by three or four numerals are usually newly developed tubes which have not yet been assigned catalog numbers. In a few cases klystrons became so well known by their developmental designations that these are used permanently.

CW POWER KLYSTRONS

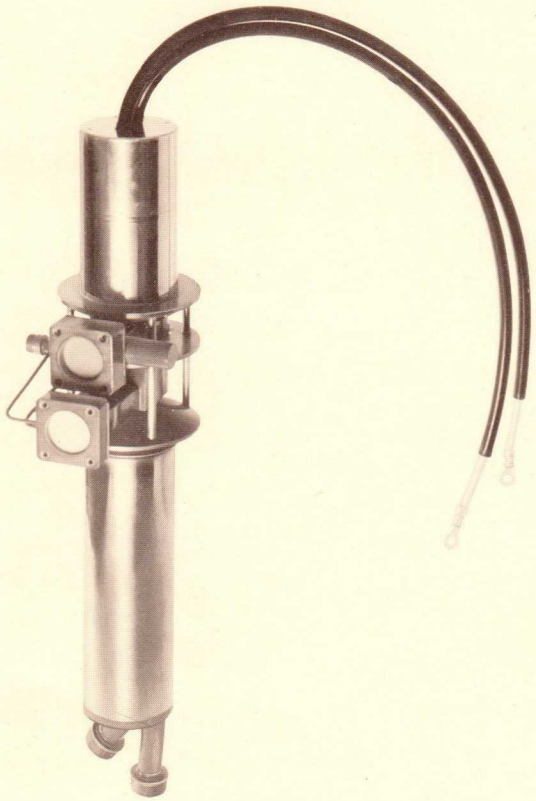


HIGH VOLTAGE POWER SUPPLY

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 most recent product of the Eimac High Power Microwave Tube Laboratory. It 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.

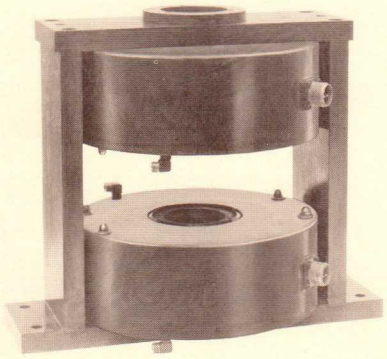
The X850 is intended especially for use in space age applications including missile and satellite tracking systems, radar astronomy, and earth-to-space vehicle communications.

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 with integral, shielded connecting leads, 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.

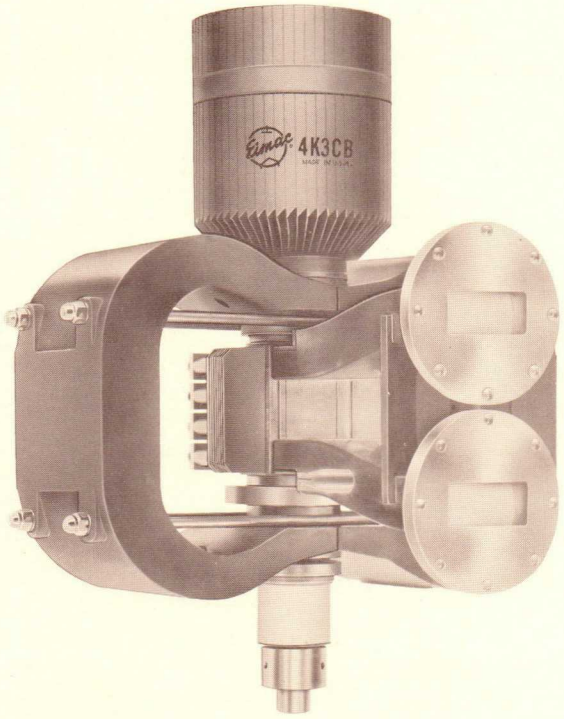
TYPICAL CHARACTERISTICS

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.

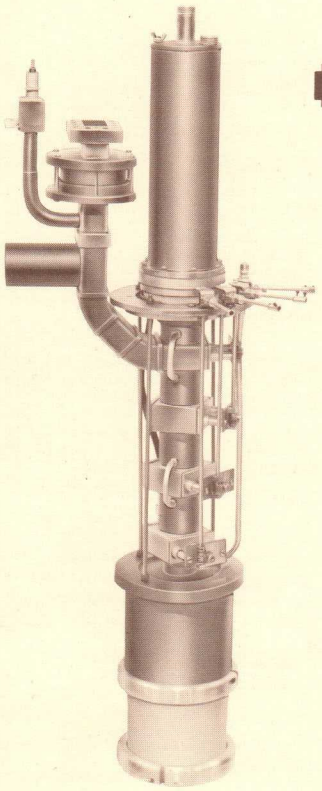
TYPICAL OPERATION

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, Peak (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

2856 Mc

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	2856 Mc
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.

X3015

2700 - 2900 Mc

6 Mw Peak - 10 kW Average

The Eimac X3015 is a versatile, wide band, pulse-amplifier klystron designed to meet the most exacting requirements of modern frequency agile radar systems. Its unusual design incorporates a six-cavity driver section and a three stage filter output circuit. The tube has seven interaction gaps.

TYPICAL CHARACTERISTICS

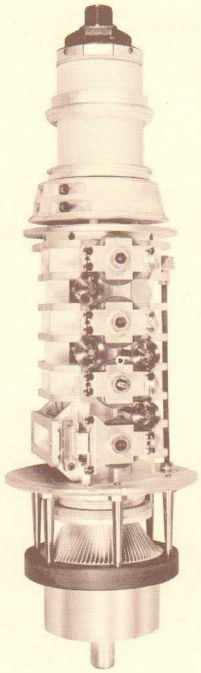
Center Frequency	2800 Mc
Output Power, Peak	6 Mw
Output Power, Average	10 kW
Gain	40 db
Beam Voltage	140 kVdc
Beam Current, Peak	122 a
Bandwidth	200 Mc
Cooling	Liquid
Length Including Electromagnet	40 in.
Diameter Including Electromagnet	16 in.

X700

2400 - 2900 Mc

20 kw Peak - 1 kW Average

PULSE AMPLIFIER KLYSTRON FOR USE IN MILITARY VEHICLES



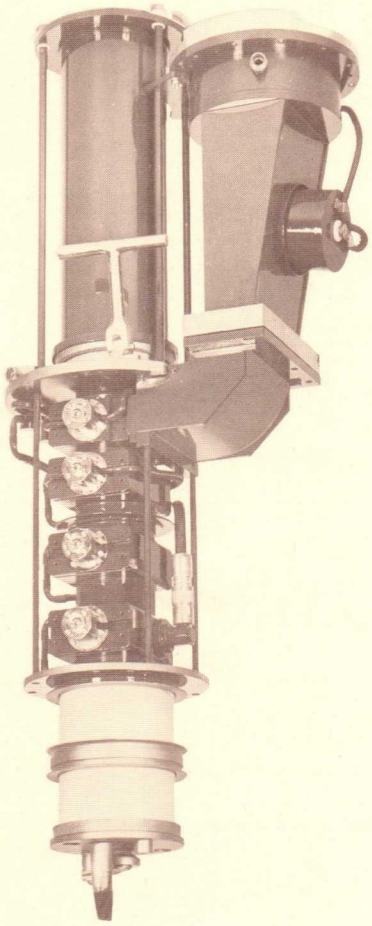
TYPICAL CHARACTERISTICS

Frequency	2400 - 2900 Mc
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.

S BAND CW



4KM70SJ

1.7 - 2.4 Gc
20 kW

4KM70SK

2.55 - 2.7 Gc
20 kW

The 4KM70SJ was the first product of Eimac's new High Power Microwave Tube Laboratory, established in 1961. The design of this klystron is completely new, incorporating many recent advances in klystron technology. Its companion, the 4KM70SK differs essentially only in frequency range. Each klystron features a confined flow electron gun, non-critical focusing electromagnet, long-life EMA cathode, fixed input and output coupling, built-in titanium vacuum pump and the Eimac Modulating Anode.

TYPICAL CHARACTERISTICS

	4KM70SJ	4KM70SK
Frequency	1.7 - 2.4	2.55 - 2.7 Gc
Output Power	20	20 kW
Driving Power	1	1 W
Beam Voltage	20	21 kVdc
Beam Current	2.8	2.8 Adc
Modulating Anode Voltage	13	13 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 36 in. long
Weight, Klystron Only	90	90 lbs.
3 db Bandwidth	10	10 Mc
Electromagnet Catalog Number	H-136	H-162

5KM70SF

1.71 - 1.8 Gc
10 kW

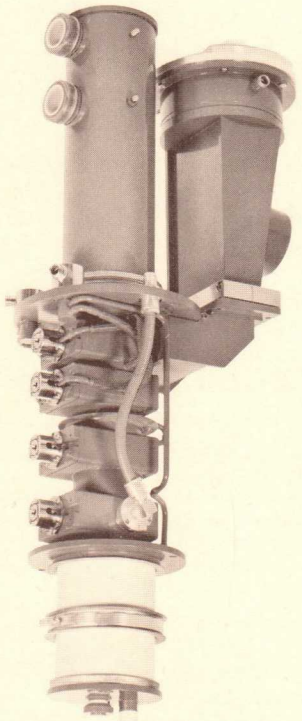
The Eimac 5KM70SF was designed for, and will be used in, the ground transmitters of Project Relay, satellite communications system. For this service the tube must be capable of extraordinary performance. Important are linearity, bandwidth, differential envelope time delay, incidental phase modulation, random amplitude modulated noise and ability to withstand environmental extremes. To meet these requirements the 5KM70SF has been designed as a 20 kW tube although its rated output power is 10 kW.

The 5KM70SF features a long-life EMA cathode, confined flow electron gun, non-critical focusing electromagnet, fixed input and output coupling, built-in titanium vacuum pump and the Eimac Modulating Anode.

TYPICAL CHARACTERISTICS

Frequency	1.71 - 1.8 Gc
Output Power	10 kW
Gain	30 db
Beam Voltage	17 kVdc
Beam Current	3.6 Adc
Modulating Anode Voltage	16 kVdc
1 db Bandwidth	14 Mc
Heater Voltage	7 Vac
Heater Current	12 Adc
RF Input	Type N Coaxial
RF Output	WR-430 Waveguide
Length Including Electromagnet	38 in.
Diameter Including Electromagnet	19 in.
Weight Including Electromagnet	300 lbs.
Cooling	60% Ethylene Glycol/Water
Electromagnet Catalog Number	H-159
Electromagnet Voltage (max.)	250 Vdc
Electromagnet Current (max.)	20 Adc

S BAND CW



4KM50SJ

1.7 - 2.4 Gc
10 kW

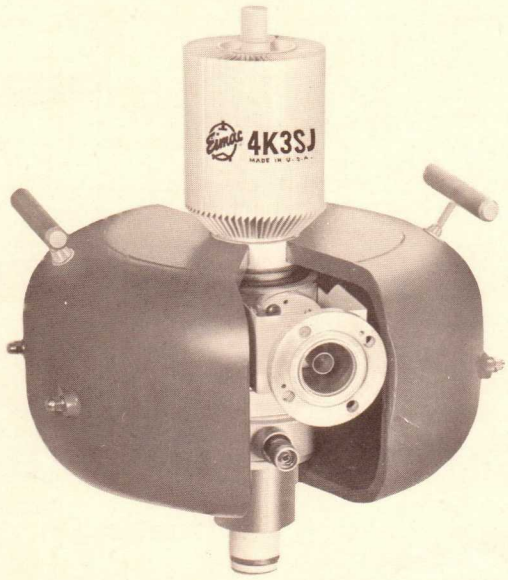
4KM50SK

2.55 - 2.7 Gc
10 kW

These Eimac power klystrons differ essentially only in frequency range. 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 coupling, built-in titanium vacuum pump and the Eimac Modulating Anode.

TYPICAL CHARACTERISTICS

	4KM50SJ	4KM50SK
Frequency	1.7 - 2.4	2.55 - 2.7 Gc
Output Power	10	10 kW
Driving Power	1	1 W
Beam Voltage	16	17 kVdc
Beam Current	1.6	1.6 Adc
Modulating Anode Voltage	9	9 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 33 in. long
3 db Bandwidth	10	10 Mc
Electromagnet Catalog Number	H-158	H-161



4K3SJ

1.7 - 2.4 Gc
1 kW

4K3SK

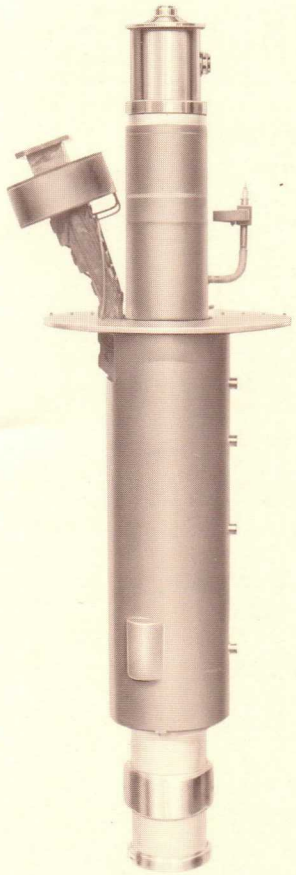
2.4 - 2.7 Gc
1 kW

The Eimac 4K3SJ and 4K3SK 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 coupling eliminates all adjustments except tuning of the four cavities.

TYPICAL CHARACTERISTICS

	4K3SJ	4K3SK
Frequency	1.7 - 2.4	2.4 - 2.7 Gc
Output Power	1	1 kW
Gain	45	47 db
3 db Bandwidth	4 - 6	6 Mc
Beam Voltage	6	7 kVdc
Beam Current	0.54	0.48 Adc
Heater Voltage	6	6 Vac
Heater Current	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 lbs.

L BAND PULSE



X780

1235 - 1365 Mc
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	1235 - 1365 Mc
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.

X3002

1235 - 1365 Mc
4 kw Peak - 120 W Average

TYPICAL CHARACTERISTICS

Frequency	1235 - 1365 Mc
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	4.8 Aac
RF Input Coupling	50 ohm, Type N
RF Output Coupling	1⅝ 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	26 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

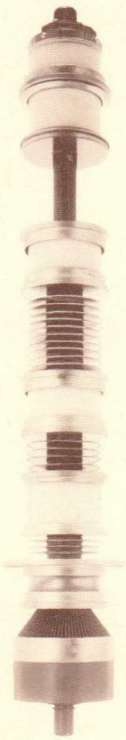
1 kW

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

1235 - 1365 Mc

1 kW

TYPICAL CHARACTERISTICS

Frequency	1235 - 1365 Mc
Output Power	1 kW
Drive Power	8 W
Beam Voltage	7.2 kVdc
Beam Current	0.44 Adc
Modulating Anode Voltage, Peak	2.71 kVdc
Heater Voltage	7 Vac
Heater Current	4.8 Aac
RF Input Coupling	50 ohm, Type N
RF Output Coupling	1⅝ 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

◗ X841D

400 - 450 Mc

2.5 Mw Peak - 150 kW Average

The Eimac X841D is a six-cavity, pulse-amplifier klystron designed for frequency-agile, high-average-power radar. A minimum 1 db bandwidth of 5% is provided by this klystron. Minimum modulating power is required for pulse formation through use of the Eimac Modulating Anode.

A built-in ion pump and gauge maintains low gas pressure and enables continuous monitoring of this pressure.

ELECTROMAGNET

Catalog Number	H-150
Dimensions:	
Length	85 in.
Diameter	29 in.
Weight	2000 lbs.

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	79 kv
Pulse Width	2000 us
Duty	0.06
1 db Bandwidth, Minimum	5 %
Heater Voltage	30 Vac
Heater Current	25 Aac
RF Input Coupling	1⅝ in., Coaxial
RF Output Coupling	6⅛ in., Coaxial
Cooling	Oil and Water
Dimensions	24 in. dia. x 131 in. long

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

400 - 450 Mc

12 kw Peak - 720 W Average

TYPICAL CHARACTERISTICS

Frequency	400 - 450 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

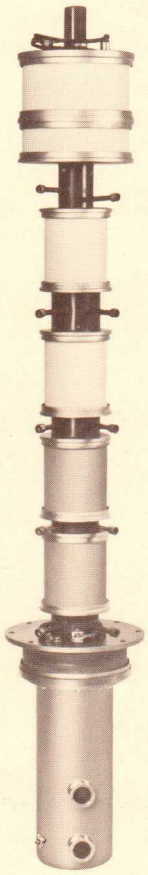
TYPICAL CHARACTERISTICS

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.

UHF-TV



4KM70LA 4KM70LF 4KM100LA
4KM100LF 4KM150LA 4KM150LF

These Eimac Power Klystrons cover the UHF television spectrum at peak synchronizing power levels from 10 kilowatts to 50 kilowatts.

FEATURES

Random AM noise more than 60 db below black level

Semi-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	4KM70LF	4KM100LA	4KM100LF	4KM150LA	4KM150LF	
Frequency	470 - 610	610 - 790	470 - 610	610 - 790	470 - 610	610 - 790	Mc
Peak Sync. Power	10 - 12.5	10 - 12.5	25	25	50	50	kw
Drive Power	10	10	20	20	20	20	W
Beam Voltage	13	13	16	16	22	22	kVdc
Beam Current	2.8	2.8	3.82	3.82	6.3	6.3	Adc
1 db Bandwidth	8	8	8	8	8	8	Mc
Heater Voltage	26	26	26	26	26	26	Vac
Heater Current	11.5	11.5	11.5	11.5	11.5	11.5	Aac
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						
Length	59	59	61	61	61	61	in.
Diameter	10	10	10	10	10	10	in.
Weight	110	108	119	115	119	115	lbs.

ASSOCIATED KLYSTRON AMPLIFIER CIRCUIT ASSEMBLIES

Catalog Number	H-151	H-155	H-133	H-156	H-152	H-154	
Length (With Tube)	59	59	61	61	61	61	in.
Width and Depth	29	29	29	29	29	29	in.
Weight	1188	1180	1188	1180	1188	1180	lbs.

UHF-CW

3K210,000LQ

755 - 985 Mc

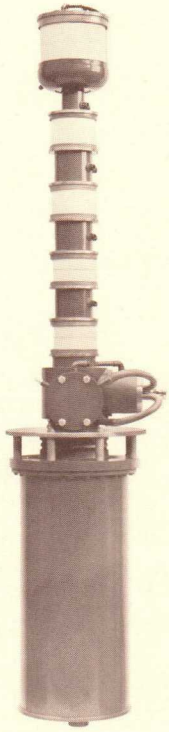
75 kW

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

TYPICAL CHARACTERISTICS

Frequency	350 - 475 Mc
Output Power	11.8 kW
Drive Power	0.5 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-153
Dimensions (Including Klystron):	
Length	68 in.
Diameter	26 in.
Weight	1084 lbs.

4KM3000LR

610 - 985 Mc

2 kW

TYPICAL CHARACTERISTICS

Frequency	610 - 985 Mc
Output Power	2.1 kW
Drive Power	0.05 W
Beam Voltage	8.5 kVdc
Beam Current	0.55 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 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

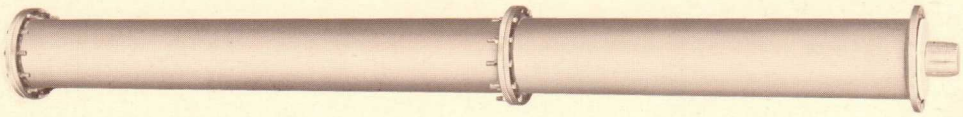
Catalog Number	H-120
Dimensions (Including Klystron):	
Length	50 in.
Diameter	26 in.
Weight	538 lbs.

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.

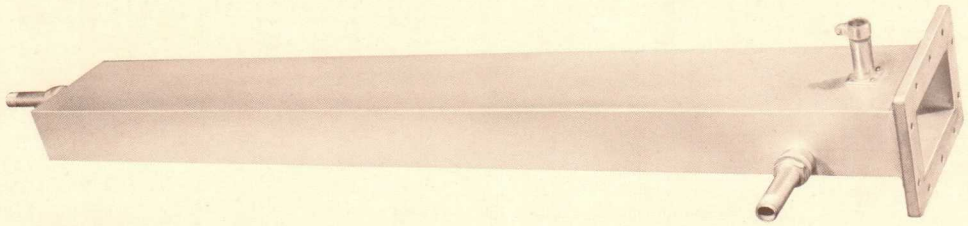
These water loads are available in both coaxial and waveguide form. In all cases, the RF power is dissipated directly into the liquid and therefore the chemical composition and temperature of the liquid will affect the VSWR which the load introduces into the transmission line or the waveguide to which 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.

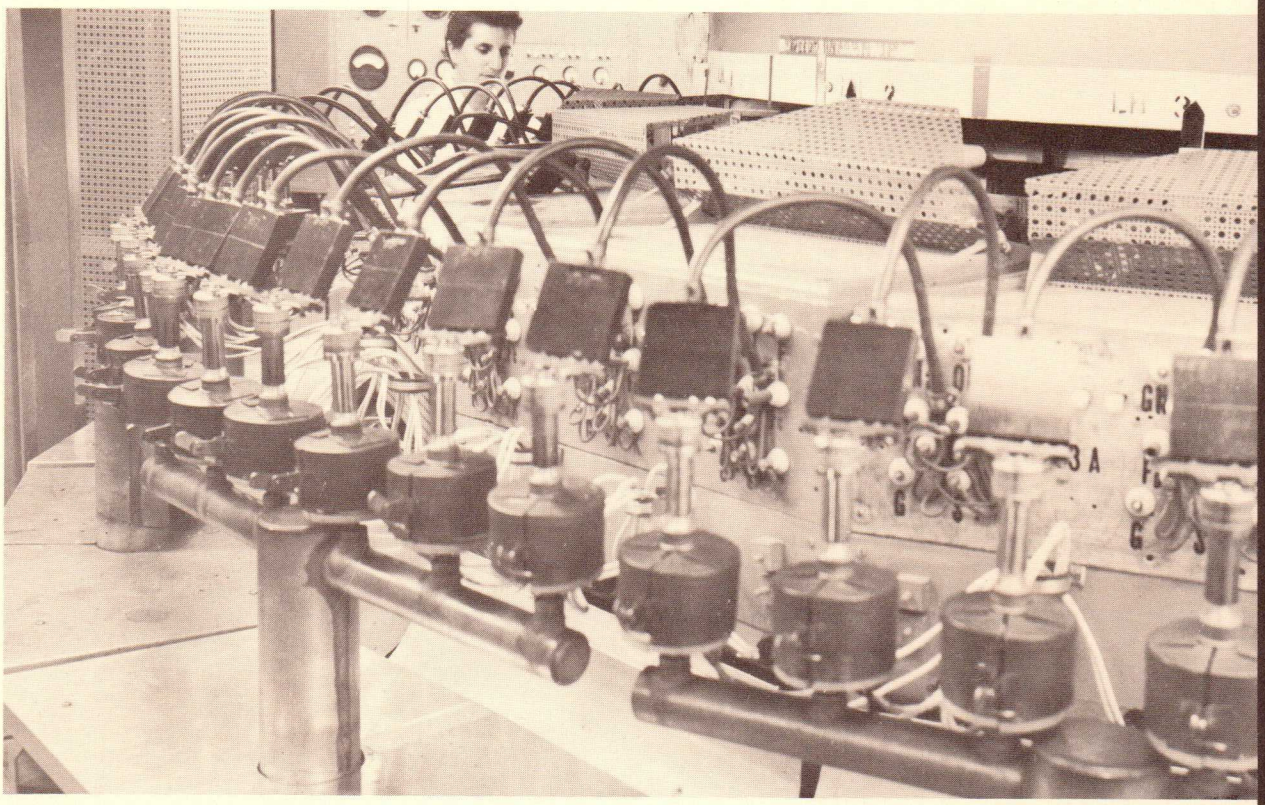


WL-150

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	6⅛ in. Coaxial	250-750	300	5	1.1:1	87	78
WL-160	6⅛ in. Coaxial	200-750	300	5	1.07:1	153	112
WL-201	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. These ceramic and metal tubes are recommended for use in compact, high-frequency equipment where space is at a premium and dependability is essential. 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. Electron power tubes are available for all classes of service including coaxial-based tubes for high-frequency operation, water-cooled tubes with plate dissipation ratings to 50 kilowatts, breechblock-based tubes for rugged environments, and lightweight tubes for airborne and pulse applications.

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.

◗ Indicates new product.

RECTIFIERS

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

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

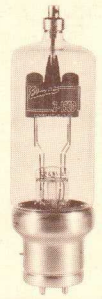
CHARACTERISTICS

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



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

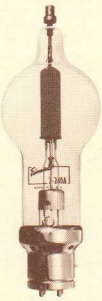
CHARACTERISTICS

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



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

RECTIFIERS

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

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

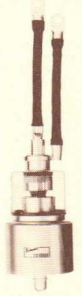
PEAK INVERSE	25,000 volts
D-C CURRENT	1.25 amperes
PEAK CURRENT	25.0 amperes
PLATE DISSIPATION	1000 watts

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

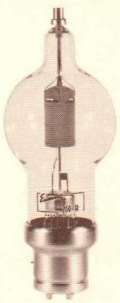
PEAK INVERSE	25,000 volts
D-C CURRENT	3.0 amperes
PEAK CURRENT	20.0 amperes
PLATE DISSIPATION	3000 watts

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



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

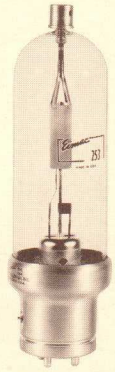
CHARACTERISTICS

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

RECTIFIERS



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

8020

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

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

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

TRIODES

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

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

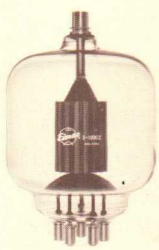
CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 5.0 volts
Current 13.5 to 14.7 amperes
Capacitances (Grounded Filament):
Grid-Filament 6.0 to 9.0 uufd
Grid-Plate 4.0 to 5.3 uufd
Plate-Filament 0.11 uufd

Base 5-pin, Special
Socket Eimac SK-410
Maximum Base Temp. 200 °C
Maximum Plate Seal Temp. 225 °C
Maximum Height 5.25 inches
Maximum Diameter 3.57 inches
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.



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

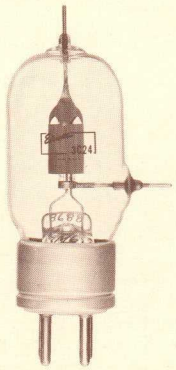
Filament: Thoriated tungsten
Voltage 7.5 volts
Current 21.3 amperes
Capacitances (Grounded Filament):
Grid-Filament 17.0 uufd
Grid-Plate 6.9 uufd
Plate-Filament 0.12 uufd

Base 5-pin, Special
Socket Eimac SK-510
Maximum Base Temp. 200 °C
Maximum Plate Seal Temp. 225 °C
Maximum Height 7.88 inches
Maximum Diameter 5.25 inches
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.

TRIODES



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.

3CPN10A5

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

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

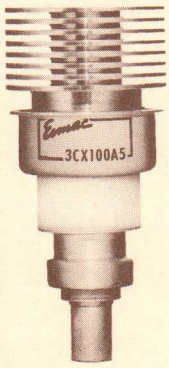
Base Coaxial
Maximum Seal Temp. 250 °C
Maximum Anode Temp. 250 °C
Maximum Height 2.276 inches
Maximum Diameter 1.195 inches
Net Weight 1.6 ounces

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

3CW20,000A1
3CW20,000A3
3CW20,000A7

These three ceramic-and-metal triodes are water-cooled versions of the 3CX10,000A1, 3CX10,000A3, 3CX10,000A7. Each carries a 20 KW plate dissipation rating and otherwise is identical to its air-cooled counterpart.

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



3CX100A5

This ceramic and metal planar UHF triode is intended to supersede all tubes of the 2C39A family. Narrow mechanical tolerances plus exacting electrical testing assure tube-to-tube uniformity. The Eimac 3CX100A5 unilaterally replaces 2C39A's and other associated tube types in most equipments without requiring electrical or mechanical modification. It is also recommended for use in equipments of new design.

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. 300 °C
Maximum Anode-Core Temp. 300 °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

TRIODES

7289

This ceramic and metal UHF triode is equal in quality to the famous Eimac 3CX100A5 and is also intended to supersede all tubes of the 2C39A family. The Eimac 7289 will unilaterally replace 2C39A's and other associated tube types in most equipment without the necessity of electrical or mechanical modification. It is recommended for use in equipment of new design.

CHARACTERISTICS

Cathode: Oxide-coated, unipotential		Base	Coaxial
Heater:		Maximum Seal Temp.	300 °C
Voltage	6.0 volts	Maximum Anode-Core Temp.	300 °C
Current	0.90 to 1.05 amperes	Maximum Height	2.701 inches
Capacitances:		Maximum Diameter	1.264 inches
Grid-Cathode	5.6 to 7.0 uufd	Net Weight	2.5 ounces
Grid-Plate	1.95 to 2.15 uufd		
Plate-Cathode	0.035 uufd		

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

3CX100F5

This special tube type, utilizing a 26.5-volt heater, is otherwise identical to the famous Eimac 3CX100A5. Here too, tight dimensional tolerances and exacting electrical testing result in greater uniformity than that found in other UHF planar triodes.

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

CHARACTERISTICS

Cathode: Oxide-coated, unipotential		Base	Coaxial
Heater:		Maximum Seal Temp.	250 °C
Voltage	26.5 volts	Maximum Anode-Core Temp.	250 °C
Current	0.225 ampere	Maximum Height	2.701 inches
Capacitances:		Maximum Diameter	1.264 inches
Grid-Cathode	5.6 to 7.0 uufd	Net Weight	2.5 ounces
Grid-Plate	1.95 to 2.15 uufd		
Plate-Cathode	0.035 uufd		

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—500 megacycles	1000	0.125	100	2	800	0.080	6	27
C	Radio-Frequency Power Amplifier and Oscillator—2500 megacycles	1000	0.125	100	2	900	0.090	—	15
C	Plate-Modulated Radio-Frequency Power Amplifier and Oscillator — 500 megacycles	600	0.100	70	2	600	0.065	5	16

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

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		Base	Coaxial
Voltage	7.5 volts	Socket	Eimac SK-1300
Current	94.0 to 104.0 amperes	Maximum Seal Temp.	250 °C
Capacitances (Grounded Filament):		Maximum Anode-Core Temp.	250 °C
Grid-Filament	45.0 to 57.0 uufd	Maximum Height	8.50 inches
Grid-Plate	25.0 to 32.0 uufd	Maximum Diameter	7.00 inches
Plate-Filament	3.4 to 4.2 uufd	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.

TRIODES

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				Typical Operation			
		Plate Voltage (volts)	Plate Current (amps)	Plate Diss. (watts)	Grid Diss. (watts)	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				Typical Operation			
		Plate Voltage (volts)	Plate Current (amps)	Plate Diss. (watts)	Grid Diss. (watts)	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 R-F Power Amplifier	5500	3.0	6500	500	5000	3.0	380	11,900

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				Typical Operation			
		Plate Voltage (volts)	Plate Current (amps)	Plate Diss. (watts)	Grid Diss. (watts)	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				Typical Operation			
		Plate Voltage (volts)	Plate Current (amps)	Plate Diss. (watts)	Grid Diss. (watts)	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.

TRIODES

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.

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
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

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)
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.

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.

TRIODES

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

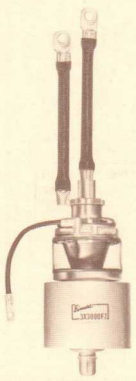
CHARACTERISTICS

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.



3X3000F7

The Eimac 3X3000F7 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 3X3000F7 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 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 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 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.

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.

TRIODES

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.

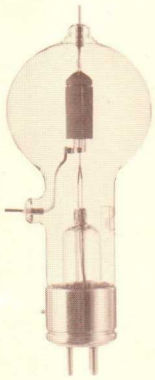
PLATE DISSIPATION 50 watts
FREQUENCY FOR MAXIMUM RATINGS 100 megacycles
COOLING Convection & Radiation

CHARACTERISTICS

Filament: Thoriated tungsten		Base	Medium 4-pin bayonet
Voltage	5.0 volts	Socket	Johnson 122-224, National XC-4 or CIR-4
Current	3.6 to 4.2 amperes	Maximum Seal Temp.	200 °C
Capacitances:		Maximum Envelope Temp.	225 °C
Grid-Filament	3.0 to 5.0 uufd	Maximum Height	5.500 inches
Grid-Plate	1.4 to 2.2 uufd	Maximum Diameter	1.813 inches
Plate-Filament	0.08 to 0.23 uufd	Net Weight	2.5 ounces

Class of Operation	Type of Service	Maximum Ratings				Typical Operation			
		Plate Voltage (volts)	Plate Current (amp)	Plate Diss. (watts)	Grid Diss. (watts)	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.

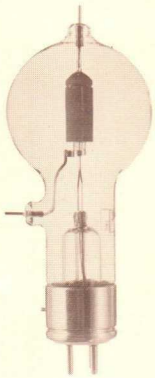
PLATE DISSIPATION 75 watts
FREQUENCY FOR MAXIMUM RATINGS 40 megacycles
COOLING Convection & Radiation

CHARACTERISTICS

Filament: Thoriated tungsten		Base	Medium 4-pin bayonet
Voltage	5.0 volts	Socket	Johnson 122-224, National XC-4 or CIR-4
Current	5.8 to 6.6 amperes	Maximum Seal Temp.	200 °C
Capacitances:		Maximum Envelope Temp.	225 °C
Grid-Filament	2.0 to 3.4 uufd	Maximum Height	7.250 inches
Grid-Plate	1.7 to 2.9 uufd	Maximum Diameter	2.810 inches
Plate-Filament	0.15 to 0.35 uufd	Net Weight	3 ounces

Class of Operation	Type of Service	Maximum Ratings				Typical Operation			
		Plate Voltage (volts)	Plate Current (amp)	Plate Diss. (watts)	Grid Diss. (watts)	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.

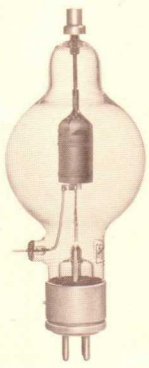
PLATE DISSIPATION 75 watts
FREQUENCY FOR MAXIMUM RATINGS 40 megacycles
COOLING Convection and Radiation

CHARACTERISTICS

Filament: Thoriated tungsten		Base	Medium 4-pin bayonet
Voltage	5.0 volts	Socket	Johnson 122-224, National XC-4 or CIR-4
Current	5.8 to 6.6 amperes	Maximum Seal Temp.	200 °C
Capacitances:		Maximum Envelope Temp.	225 °C
Grid-Filament	1.8 to 3.2 uufd	Maximum Height	7.250 inches
Grid-Plate	1.8 to 3.2 uufd	Maximum Diameter	2.810 inches
Plate-Filament	0.30 to 0.50 uufd	Net Weight	3 ounces

Class of Operation	Type of Service	Maximum Ratings				Typical Operation			
		Plate Voltage (volts)	Plate Current (amp)	Plate Diss. (watts)	Grid Diss. (watts)	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

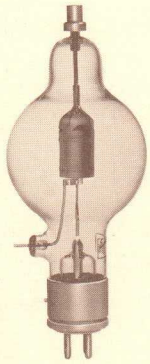
CHARACTERISTICS

Filament: Thoriated tungsten		Base	Medium 4-pin bayonet
Voltage	5.0 volts	Socket	Johnson 122-224, National XC-4 or CIR-4
Current	5.8 to 6.6 amperes	Maximum Seal Temp.	200 °C
Capacitances:		Maximum Envelope Temp.	225 °C
Grid-Filament	2.5 to 3.4 uufd	Maximum Height	7.750 inches
Grid-Plate	1.7 to 2.3 uufd	Maximum Diameter	3.187 inches
Plate-Filament	0.45 uufd	Net Weight	4 ounces

Class of Operation	Type of Service	Maximum Ratings				Typical Operation			
		Plate Voltage (volts)	Plate Current (amp)	Plate Diss. (watts)	Grid Diss. (watts)	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



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

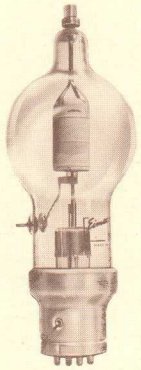
CHARACTERISTICS

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.



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

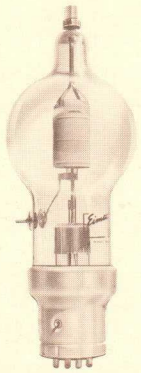
CHARACTERISTICS

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

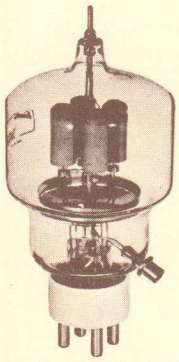
CHARACTERISTICS

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.



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

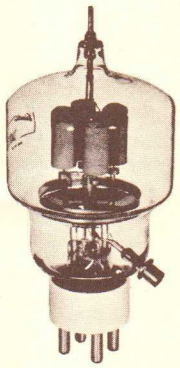
Filament: Thoriated tungsten
Voltage 5.0 volts
Current 24.0 to 28.0 amperes
Capacitances:
Grid-Filament 12 to 16 uufd
Grid-Plate 8 to 11 uufd
Plate-Filament 1.0 uufd

Base Special 4-pin
Socket Johnson 124-213
Maximum Seal Temp. 200 °C
Maximum Envelope Temp. 225 °C
Maximum Height 7.625 inches
Maximum Diameter 3.563 inches
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.

TRIODES



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
Voltage 5.0 volts
Current 24.0 to 28.0 amperes
Capacitances:
Grid-Filament 10.0 to 14.3 uufd
Grid-Plate 7.1 to 10.2 uufd
Plate-Filament 0.9 uufd

Base Special 4-pin
Socket Johnson 124-213
Maximum Seal Temp. 200 °C
Maximum Envelope Temp. 225 °C
Maximum Height 7.625 inches
Maximum Diameter 3.563 inches
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.

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

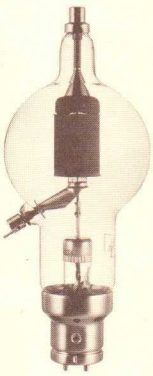
CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 7.5 volts
Current 11.0 to 12.5 amperes
Capacitances:
Grid-Filament 7.3 to 8.9 uufd
Grid-Plate 4.0 to 5.4 uufd
Plate-Filament 0.4 to 0.9 uufd

Base Special 4-pin
Socket Johnson 211 or National XM-50
Maximum Seal Temp. 200 °C
Maximum Envelope Temp. 225 °C
Maximum Height 12.625 inches
Maximum Diameter 5.125 inches
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.



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

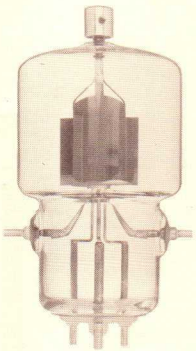
CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 7.5 volts
Current 11.0 to 12.5 amperes
Capacitances:
Grid-Filament 5.6 to 7.6 uufd
Grid-Plate 4.2 to 5.7 uufd
Plate-Filament 0.5 to 0.8 uufd

Base Special 4-pin
Socket Johnson 211 or National XM-50
Maximum Seal Temp. 200 °C
Maximum Envelope Temp. 225 °C
Maximum Height 12.625 inches
Maximum Diameter 5.125 inches
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.



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.

TRIODES

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.

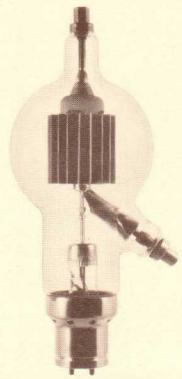
PLATE DISSIPATION 750 watts
FREQUENCY FOR MAXIMUM RATINGS 40 megacycles
COOLING Radiation and Convection

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				Typical Operation			
		Plate Voltage (volts)	Plate Current (amp)	Plate Diss. (watts)	Grid Diss. (watts)	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.



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.

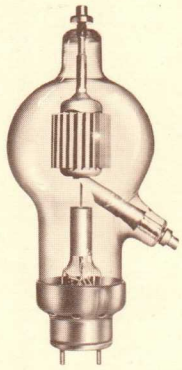
PLATE DISSIPATION 1000 watts
FREQUENCY FOR MAXIMUM RATINGS 50 megacycles
COOLING Radiation and Forced Air

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				Typical Operation			
		Plate Voltage (volts)	Plate Current (amp)	Plate Diss. (watts)	Grid Diss. (watts)	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.



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.

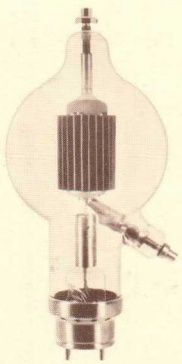
PLATE DISSIPATION 1500 watts
FREQUENCY FOR MAXIMUM RATINGS 40 megacycles
COOLING Radiation and Forced Air

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				Typical Operation			
		Plate Voltage (volts)	Plate Current (amps)	Plate Diss. (watts)	Grid Diss. (watts)	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				Typical Operation			
		Plate Voltage (volts)	Plate Current (amps)	Plate Diss. (watts)	Grid Diss. (watts)	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.

TETRODES

4-65A

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

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

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

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.

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

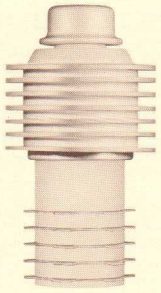
CHARACTERISTICS

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.



4CX125C

This tube type is a horizontally-finned version of the famous 4CX300A and is intended for use where transverse air cooling is desired. However, it is also useful in applications where anode power is dissipated by liquid immersion. Its electrical characteristics are identical to those of the 4CX300A with the exception of plate dissipation, which is established at 125 watts maximum when air cooling is employed. It is ideally suited for applications where shock and/or vibration are experienced.

PLATE DISSIPATION 125 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. 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 R-F Power Amplifier	1500	0.200	80	12	2	1500	250	0.200	1.7	235

TETRODES

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.

4CX250B

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.

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 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 R-F Power Amplifier	1500	0.200	165	12	2	1500	250	0.200	1.7	235

*Two tubes.

4CX250F

The 4CX250F is a ceramic and metal radial-beam tetrode with electrical characteristics similar to the 4CX250B but designed for use where a heater voltage of 26.5 volts is more desirable. Maximum ratings apply to 500 megacycles but the tube is also an excellent choice for other r-f or a-f applications. It is recommended for use in equipments of new design.

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

CHARACTERISTICS

Cathode: Oxide-coated, unipotential
Heater:
Voltage 26.5 volts
Current 0.50 to 0.62 ampere
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 R-F Power Amplifier	1500	0.200	165	12	2	1500	250	0.200	1.7	235

*Two tubes.

4CX250K

This coaxial-based tetrode is particularly useful as a CW r-f amplifier between 500 and 1200 megacycles; in pulse applications, its useful upper frequency is above 1500 megacycles. The 4CX250K requires a heater voltage of 6.0 volts; it is recommended for use in new equipments.

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 3.0 amperes
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 R-F Power Amplifier	1500	0.200	165	12	2	1500	250	0.200	1.7	235

TETRODES

4CX250M

The 4CX250M is a coaxial-based tetrode with features which make it especially suitable for CW amplifier service at frequencies up to 1200 megacycles; in pulse service, this range is extended to above 1500 megacycles. This tube requires a heater voltage of 26.5 volts and is, therefore, suitable for use in certain specialized applications. It is recommended for use in new equipments.

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

CHARACTERISTICS

Cathode: Oxide-coated, unipotential
Heater:
Voltage 26.5 volts
Current 0.53 to 0.68 ampere
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 R-F Power Amplifier	1500	0.200	165	12	2	1500	250	0.200	1.7	235

4CX250R

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.

4CX300A

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.

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

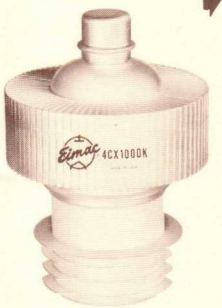
CHARACTERISTICS

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 4.75 inches
Max. Diameter 3.36 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	1.8*	0	3360*
AB_1	Radio-Frequency Linear Power Amplifier—SSB	3000	1.0	1000	12	—	3000	325	0.9	0	1680

*Two tubes.

TETRODES



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 106 uufd
Output 18 uufd
Feed-Through 0.75 uufd

Base Special, concentric
Socket Eimac SK-300A
Max. Seal Temp. 250 °C
Max. Anode-Core Temp. 250 °C
Max. Height 8.875 inches
Max. Diameter 4.875 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.

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.

TETRODES

4CX15,000A

A new addition to the Eimac line of ceramic-metal tetrodes, the 4CX15,000A has characteristics similar to those of the 4CX10,000D. It features higher plate dissipation and plate current ratings, however, and is larger physically. 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 160 amperes
Capacitances (Grounded Filament):
Input 165 uufd
Output 29 uufd
Feed-Through 1.1 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 7.55 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	7500	5.0	15,000	450	200	7500	750	4.0	250	22,600

4CX35,000A

This brand new very-high-power ceramic-metal tetrode features a 35,000 watt plate dissipation rating and is intended for audio or radio-frequency use. The 4CX35,000A carries full ratings through the FM broadcast band. A special version, the 4CX35,000C, is intended specifically for use as a plate-and-screen-modulated class-C amplifier. These tubes are recommended for use in new equipment.

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

CHARACTERISTICS

Filament: Thoriated tungsten
Voltage 10.0 volts
Current 290 amperes
Capacitances (Grounded Filament):
Input 550 uufd
Output 100 uufd
Feed-Through 4 uufd
Base Special, concentric rings
Socket Eimac SK-1500
Max. Seal Temp. 250 °C
Max. Anode Core Temp. 250 °C
Max. Height 13.5 inches
Max. Diameter 9.75 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	10,000	9.0	35,000	1000	—	10,000	1000	17.4*	0	111,000*
AB_1	Radio-Frequency Linear Power Amplifier—SSB	10,000	9.0	35,000	1000	—	10,000	1000	8.7	0	55,500
C	Radio-Frequency Power Amplifier and Oscillator	10,000	7.0	35,000	1000	300	10,000	500	6.9	300	55,000
C	Plate-Modulated R-F Power Amplifier**	10,000	7.0	35,000	1000	300	10,000	500	6.7	340	55,000

**4CX35,000C

*Two tubes.

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.

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.

TETRODES

4X150A

This 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.

PLATE DISSIPATION 250 watts
FREQUENCY FOR MAXIMUM RATINGS 150 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 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 R-F Power Amplifier	1600	0.200	165	12	2	1500	250	0.200	1.7	235

*Two tubes.

4X150D

A 26.5-volt heater makes the 4X150D suitable for service in many applications where this somewhat unusual heater voltage is encountered. This tube type has recently been improved and it now carries new plate-voltage and plate-dissipation ratings; present ratings allow 500 watts input at frequencies up to 150 megacycles.

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

CHARACTERISTICS

Cathode: Oxide-coated, unipotential
Heater:
Voltage 26.5 volts
Current 0.50 to 0.62 ampere
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 R-F Power Amplifier	1600	0.200	165	12	2	1500	250	0.200	1.7	235

*Two tubes.

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. 150 °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 Oscilator	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

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).

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

CHARACTERISTICS

Cathode: Oxide-coated, unipotential
Heater:
Voltage 6.0 volts
Current 2.4 to 3.0 amperes
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 R-F Power Amplifier	1600	0.200	165	12	2	1500	250	0.200	1.7	235

*Two tubes.

TETRODES

4X150S

This new addition to the Eimac tetrode line is a ruggedized version of the famous 4X150D. 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 4X150S will replace the 4X150D 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).

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

CHARACTERISTICS

Cathode: Oxide-coated, unipotential
Heater:
Voltage 26.5 volts
Current 0.56 to 0.68 ampere
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)	Plate Voltage (volts)	Typical Operation: 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	1600	0.200	165	12	2	1500	250	0.200	1.7	235

*Two tubes.

4X250B

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.

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 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. 175 °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)	Plate Voltage (volts)	Typical Operation: 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.

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)	Plate Voltage (volts)	Typical Operation: 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.

Y-180

This special version of the popular 4CX300A incorporates a Nickel plating and Rhodium "flash" on all external metallic surfaces. It is intended for use in corrosive environments, including oils which react unfavorably with copper. Electrically, the Y-180 is identical to the 4CX300A.

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. 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 (amp)	Plate Diss. (watts)	Screen Diss. (watts)	Grid Diss. (watts)	Plate Voltage (volts)	Typical Operation: 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 AND PENTODE

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

Y-260

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 Y-260 is attractive for general use wherever a compact high-power tetrode is indicated.

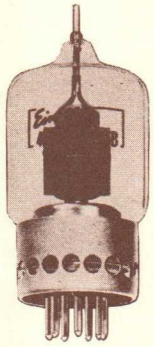
PLATE DISSIPATION 400 watts
COOLING Forced Air

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.



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.

COMPLETE TECHNICAL DATA SHEETS ARE AVAILABLE FOR ALL EIMAC STANDARD CATALOG PRODUCTS. CONTACT THE EIMAC FIELD SALES ENGINEER NEAREST YOU OR WRITE TECHNICAL INFORMATION DEPT., EITEL-McCULLOUGH, INC., SAN CARLOS, CALIFORNIA.

PULSE MODULATORS

3CPL500A8

This very-high-mu triode, designed for use in klystron switch-tube applications, represents a new answer to the requirement for a high-voltage tube with moderate current-carrying capability. Its modulating anode, while requiring fairly high drive voltage, demands little in the way of drive power. It is usually cooled by immersion in oil or other suitable insulating liquid.

MAXIMUM COLLECTOR VOLTAGE
120 kilovolts

MAXIMUM PEAK CATHODE CURRENT
5 amperes

COOLING
Oil Immersion

CHARACTERISTICS

Cathode: Oxide-coated, unipotential	
Heater:	
Voltage	7.5 volts
Current	5.5 amperes
Capacitances:	
Input (approx.)	10 uufd
Output (approx.)	2.5 uufd
Base	Special, concentric
Recommended Socket	SK-200
Maximum Temperature	120 °C
Max. Length (approx.)	12 inches
Max. Diameter (approx.)	5 inches
Net Weight	4.9 pounds

MAXIMUM RATINGS

D-C COLLECTOR VOLTAGE	120 kilovolts
MOD. ANODE VOLTAGE	15 kilovolts
FOCUS ELECTRODE VOLTAGE	—200 volts
CATHODE CURRENT:	
PEAK	5.0 amperes
AVERAGE	500 milliamperes
AV. COLLECTOR DISS.	500 watts
AV. MODULATING ANODE DISS.	25 watts

TYPICAL OPERATION

D-C Collector Voltage	60 kilovolts
Mod. Anode Voltage	6.6 kilovolts
Focus Electrode Voltage	—100 volts
Cathode Current:	
Peak	1.5 amperes
Average	5 milliamperes
Av. Collector Diss.	50 watts
Tube Drop	700 volts

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

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

PULSE MODULATORS

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	5.5 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

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

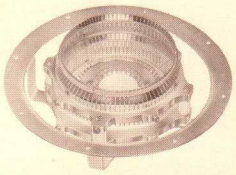
MAXIMUM RATINGS

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

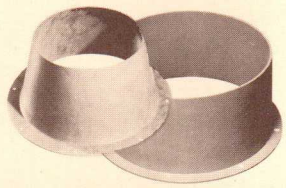
SOCKETS

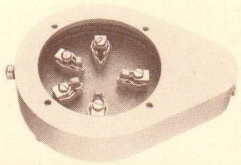


SK-300A

AIR-SYSTEM SOCKET	TUBE	SCREEN BYPASS CAPACITOR		GROUNDED CONTACTS	CHIMNEY
		CAPACITANCE (uufd)	VOLTAGE RATING (volts d-c)		
SK-300A	4CW10,000A	None		None	None
	4CX5000A				SK-306
	4CX10,000D				SK-1306
	4CX15,000A				SK-316

SK-306
SK-1306
▶ SK-316

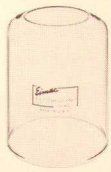


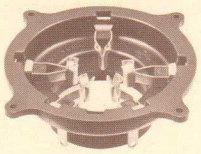


SK-400

AIR-SYSTEM SOCKET	TUBE	SCREEN BYPASS CAPACITOR		GROUNDED CONTACTS	CHIMNEY
		CAPACITANCE (uufd)	VOLTAGE RATING (volts d-c)		
SK-400	4-250A 4-400A 4PR250C 4PR400A	None		None	SK-406

SK-406

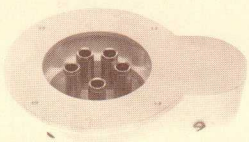




▶ SK-410

AIR-SYSTEM SOCKET	TUBE	SCREEN BYPASS CAPACITOR		GROUNDED CONTACTS	CHIMNEY
		CAPACITANCE (uufd)	VOLTAGE RATING (volts d-c)		
SK-410	3-400Z	None		None	SK-416
	4-250A 4-400A 4PR400A				SK-406
	4PR250C				None

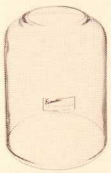
▶ SK-416
SK-406

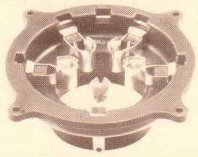


SK-500

AIR-SYSTEM SOCKET	TUBE	SCREEN BYPASS CAPACITOR		GROUNDED CONTACTS	CHIMNEY
		CAPACITANCE (uufd)	VOLTAGE RATING (volts d-c)		
SK-500	4-1000A 4PR1000A	None		None	SK-506

SK-506





▶ SK-510

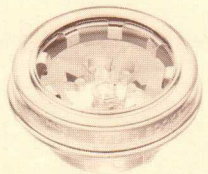
AIR-SYSTEM SOCKET	TUBE	SCREEN BYPASS CAPACITOR		GROUNDED CONTACTS	CHIMNEY
		CAPACITANCE (uufd)	VOLTAGE RATING (volts d-c)		
SK-510	3-1000Z	None		None	SK-516
	4-1000A 4PR1000A				SK-506

▶ SK-516
SK-506

SK-600
SK-610

AIR-SYSTEM SOCKET	TUBE	SCREEN BYPASS CAPACITOR		GROUNDED CONTACTS	CHIMNEY
		CAPACITANCE (uufd)	VOLTAGE RATING (volts d-c)		
SK-600	4CX250B 4CX250F 4W300B 4X150A 4X150D 4X250B 7580	2700	400	None	SK-606
SK-610				Cathode	

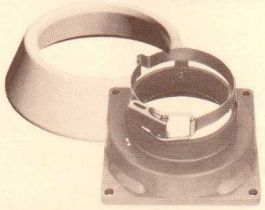
SK-606



▶ SK-620A
SK-630

AIR-SYSTEM SOCKET	TUBE	SCREEN BYPASS CAPACITOR		GROUNDED CONTACTS	CHIMNEY
		CAPACITANCE (uufd)	VOLTAGE RATING (volts d-c)		
SK-620A	4CX250B 4CX250F 4CX250R 4W300B 4X150A 4X150D 4X150R 4X150S 4X250B 7580	1100	400	None	SK-626 SK-636A
SK-630				Cathode	

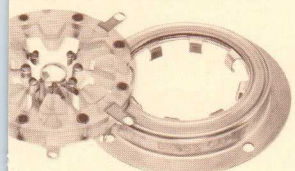
SK-626
▶ SK-636A



SK-640

AIR-SYSTEM SOCKET	TUBE	SCREEN BYPASS CAPACITOR		GROUNDED CONTACTS	CHIMNEY
		CAPACITANCE (uufd)	VOLTAGE RATING (volts d-c)		
SK-640	4CX250B 4CX250F 4W300B 4X150A 4X150D 4X250B 7580	None		None	SK-606

SK-606



SK-650
SK-655

AIR-SYSTEM SOCKET	TUBE	SCREEN BYPASS CAPACITOR		GROUNDED CONTACTS	CHIMNEY
		CAPACITANCE (uufd)	VOLTAGE RATING (volts d-c)		
SK-650	4CX250B 4CX250F 4W300B 4X150A 4X150D 4X250B 7580	None		Cathode	None
SK-655		1100	500		SK-626

SK-626

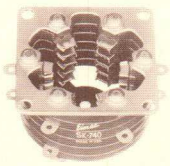
SOCKETS

SK-700
SK-710
SK-711

AIR-SYSTEM SOCKET	TUBE	SCREEN BYPASS CAPACITOR		GROUNDED CONTACTS	CHIMNEY
		CAPACITANCE (uufd)	VOLTAGE RATING (volts d-c)		
SK-700	4CN15A 4CX125C 4CX300A	1100	400	1 Heater	SK-606
SK-710				1 Heater Cathode	
SK-711*					

*The SK-711 differs from the SK-710 only in the altitude rating. The capacitor decks of the SK-711 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

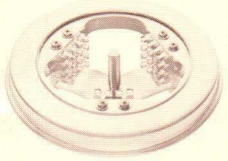


SK-740

AIR-SYSTEM SOCKET	TUBE	SCREEN BYPASS CAPACITOR		GROUNDED CONTACTS	CHIMNEY
		CAPACITANCE (uufd)	VOLTAGE RATING (volts d-c)		
SK-740	4CN15A 4CX125C 4CX300A	None	.....	None	.....

SK-760
SK-770

AIR-SYSTEM SOCKET	TUBE	SCREEN BYPASS CAPACITOR		GROUNDED CONTACTS	CHIMNEY
		CAPACITANCE (uufd)	VOLTAGE RATING (volts d-c)		
SK-760	4CN15A 4CX300A	None	.....	None	Integral Chimney
SK-770				Screen	



SK-800A
SK-810
▶ SK-860
▶ SK-870
SK-890

AIR-SYSTEM SOCKET	TUBE	SCREEN BYPASS CAPACITOR		GROUNDED CONTACTS	CHIMNEY
		CAPACITANCE (uufd)	VOLTAGE RATING (volts d-c)		
SK-800A	4CX1000A 4CW2000A†	1500	400	None	SK-806
SK-810 SK-890*				Cathode 1 Heater	
SK-860	3CX1000A7	None	.....	None	SK-816
SK-870				grid	

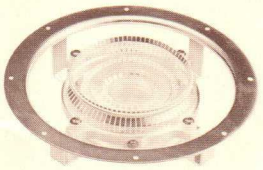
*Screen bypass capacitor isolated from screen contacts. †No chimney necessary.

SK-806
▶ SK-816

SK-900

AIR-SYSTEM SOCKET	TUBE	SCREEN BYPASS CAPACITOR		GROUNDED CONTACTS	CHIMNEY
		CAPACITANCE (uufd)	VOLTAGE RATING (volts d-c)		
SK-900	4X500A	650	700	None	SK-906

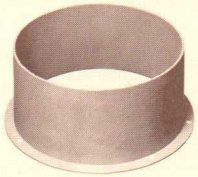
SK-906

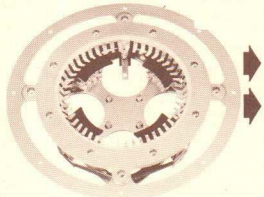


SK-1300

AIR-SYSTEM SOCKET	TUBE	SCREEN BYPASS CAPACITOR		GROUNDED CONTACTS	CHIMNEY
		CAPACITANCE (uufd)	VOLTAGE RATING (volts d-c)		
SK-1300	3CX10,000A1 3CX10,000A3 3CX10,000A7	None	.....	None	SK-1306
	3CW20,000A1 3CW20,000A3 3CW20,000A7				None

SK-1306





▶ SK-1400
▶ SK-1470

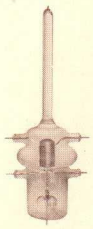
AIR-SYSTEM SOCKET	TUBE	SCREEN BYPASS CAPACITOR		GROUNDED CONTACTS	CHIMNEY
		CAPACITANCE (uufd)	VOLTAGE RATING (volts d-c)		
SK-1400	4CX3000A	1800	1000	None	SK-1406
SK-1470		None	.....	Screen	

▶ SK-1406

▶ SK-1500

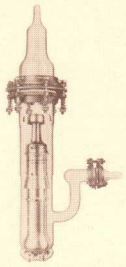
SOCKET	TUBE	SCREEN BYPASS CAPACITOR		GROUNDED CONTACTS	CHIMNEY
		CAPACITANCE (uufd)	VOLTAGE RATING (volts d-c)		
SK-1500	4CX35,000A 4CX35,000C	None	.....	None	None

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.



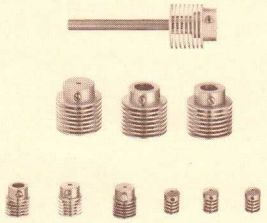
HV-1 DIFFUSION PUMP

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 (4×10^{-4} to 4×10^{-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

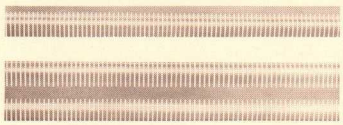
Eimac HR Heat-Dissipating Connectors are used to make electrical connections to the plate and grid terminals of Eimac Tubes, and at the same time, provide efficient heat transfer from the tube element and glass seal to the air. These connectors are machined from solid dural rod and are supplied with 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

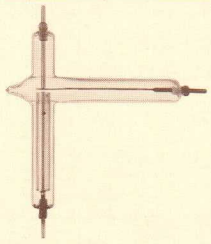
TUBE	Plate Connector	Grid Connector	TUBE	Plate Connector	Grid Connector
2-25A	HR-1	....	25T	HR-1	....
2-50A	HR-3	....	35T	HR-3	....
2-150D	HR-6	....	35TG	HR-3	HR-3
2-240A	HR-6	....	75TH-TL	HR-3	HR-2
2-450A	HR-8	....	100TH-TL	HR-6	HR-2
2-2000A	HR-8	....	VT127A	HR-3	HR-3
3-1000Z	HR-8	....	250TH-TL	HR-6	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

POWER KLYSTRONS

MICROWAVE TUBES

POWER GRID TUBES

ACCESSORY PRODUCTS

Litho in U.S.A. 3-62ZV