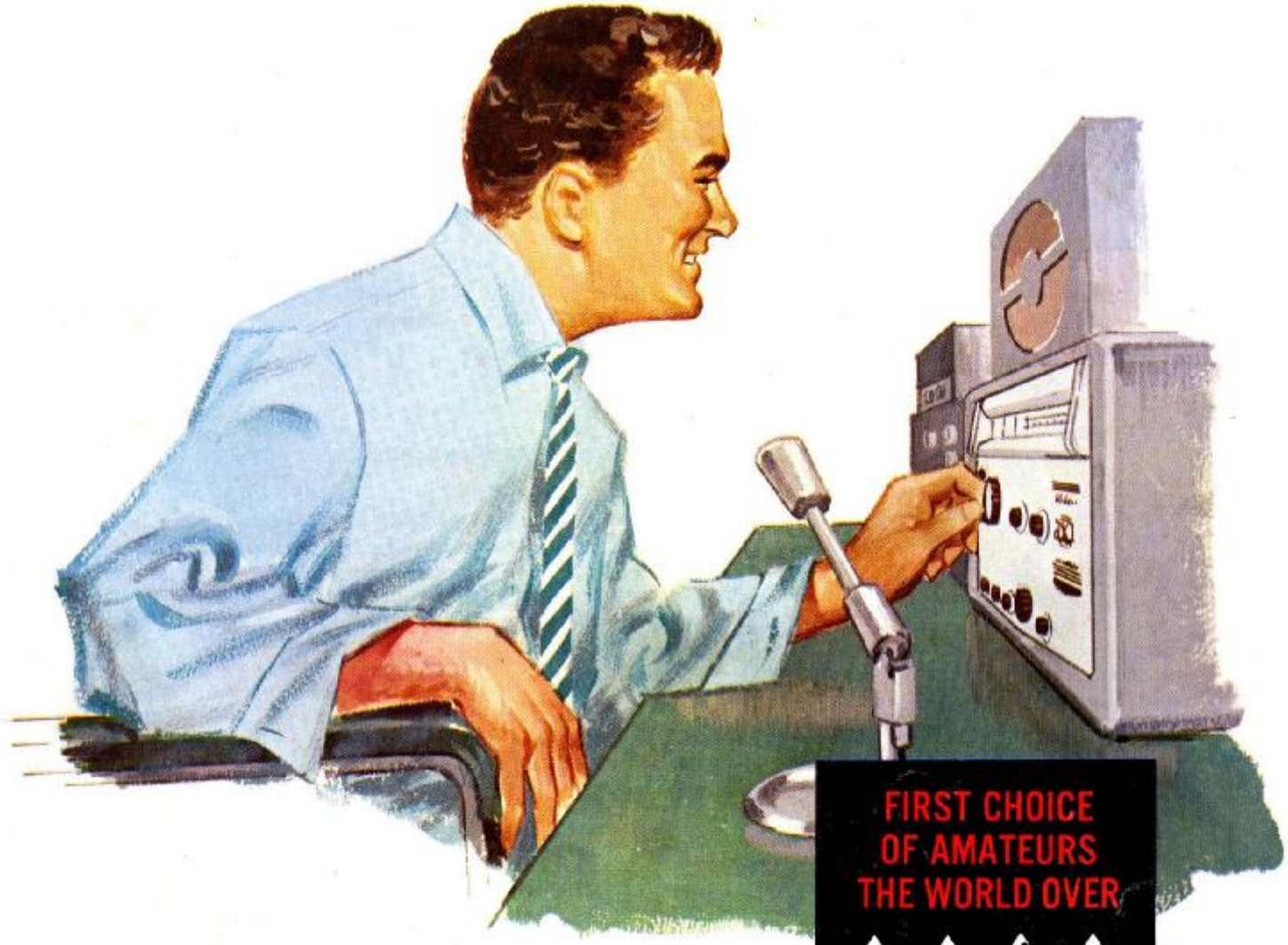
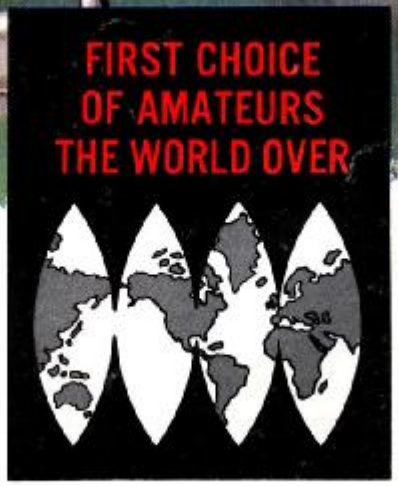
Viking®

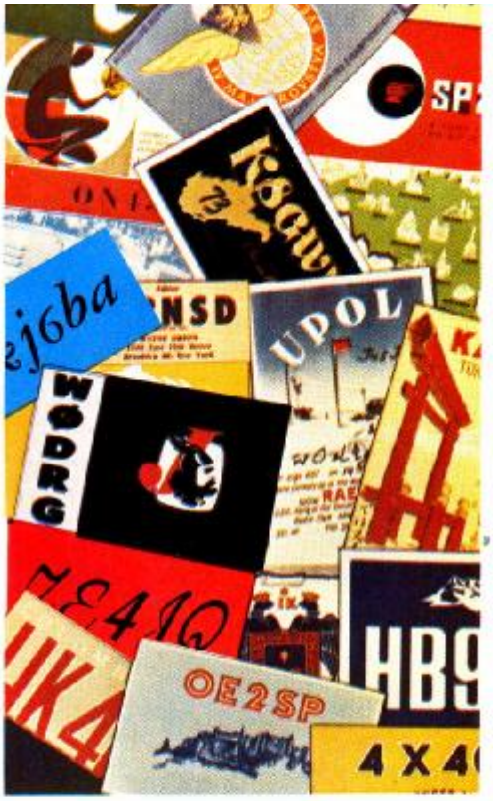
AMATEUR
CATALOG
961

AMATEUR TRANSMITTERS AND ACCESSORIES





E. F. JOHNSON COMPANY
WASECA, MINNESOTA



amateur radio is adventure...

And the fortunate amateur who owns Viking equipment enjoys the maximum amount of operating pleasure and performance.

Since the first Viking transmitter was built, amateurs everywhere have looked to the E. F. Johnson Company for leadership in transmitter design.

Owning a Viking means more than just having the best transmitter . . . it means more than the DX record you build; it means that your station has arrived.

For effective practical design and honest dollar value, Viking transmitters stand ahead of all others. Whether you choose the "Adventurer" as your first transmitter, or the fabulous "Kilowatt" as the "last word," you know beyond a doubt that your transmitter dollar is soundly invested.

The big  on the front panel tells you that!

VISIT YOUR DISTRIBUTOR — HE'S HELPFUL AND FRIENDLY

The E. F. Johnson Company sells its products only through authorized distributors. We have long recognized the valuable services an established distributor can render to the amateur.

Your distributor offers a wide choice of equipment and accessories. He has considerable experience in the field and can offer helpful suggestions. Most distributors offer convenient time payment plans to suit your budget and often as little as 10% down is all that is required to get you on the air.

Visit your distributor soon . . . see and compare the exciting new Johnson equipment!

Index

50 watts CW input

Bandswitching 80

through 10 meters

Viking "Adventurer"

This power-packed transmitter was used to earn the first Novice WAC (Worked All Continents) — and with only two crystals! More than just a novice transmitter, the "Adventurer" is completely self-contained . . . single knob bandswitching 80 through 10 meters . . . effectively TVI suppressed . . . and puts 50 watts of power into a rugged 807 transmitting tube. The "Adventurer" may be operated by crystal or external VFO control, and front panel meter switching permits monitoring of the final grid or plate currents . . . keying is clean and crisp.

FREQUENCY CONTROL — The "Adventurer" may be controlled by plug-in crystals or by any VFO delivering 5 milliwatts (8 to 10 volts across 22,000 ohms) or more output on 160 or 80 and 40 meters.

OUTPUT CIRCUIT — The wide range pi network output circuit is designed to handle a wide variety of antennas without using a separate antenna tuner. It will accommodate antenna impedances from 50 to 600 ohms and is also capable of tuning out large amounts of reactance.

TVI SUPPRESSION — The "Adventurer" cabinet completely shields the unit electrically, and a large metal-to-metal overlap at the front panel and cabinet junction completes the electrical seal. The antenna lead is brought through a coaxial type output connector and a matching plug is furnished for connection to the antenna system. Inductance-capacity type TVI filters are used at the AC input and key leads. Low inductance by-pass capacitors suppress RF harmonic energy at the filament and meter connections. In addition, pi-network output tuning provides up to 30 db high frequency harmonic attenuation in the RF output circuit.

POWER SUPPLY — The built-in power supply delivers 450 volts DC at 150 ma and 6.3 volts AC at 2 amps. An octal power receptacle located on the rear apron provides for the operation of auxiliary equipment such as a VFO, signal monitor, or modulator for phone operation. This receptacle also permits using the full output of the supply to power other equipment when the transmitter is not operating. Power supply is fused to provide protection from overload damage.

SPECIFICATIONS

FREQUENCY RANGE:
80, 40, 20, 15, and 10 meters

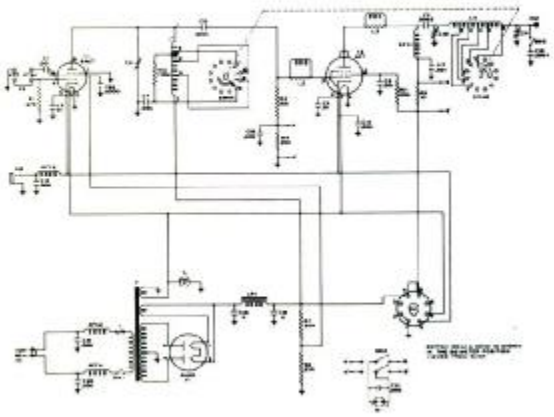
POWER INPUT:
50 Watts Continuous Wave

FUSE PROTECTION:
Fuse located in power supply circuit. Spare fuse furnished with kit.

POWER REQUIREMENTS:
105-120 V AC, 50-60 cycles, single phase. 140 watts maximum.

TUBE COMPLEMENT

6AG7—Oscillator
5U4G—Rectifier
807—Transmitting Type Power Amplifier



Professional in appearance and extremely compact, the "Adventurer" is engineered throughout for easy construction and operation by the amateur with a minimum of equipment wiring and operating experience. Wire, punched chassis, all parts, hardware, tubes and connectors furnished. Complete step-by-step assembly instructions and operating directions included. Handsome etched aluminum cabinet is finished in maroon and grey, with green nomenclature. Dimensions: 10⅜" wide x 8⅛" high x 7⅜" deep. Net Weight: 13 lbs. Shipping Weight: 19 lbs.

Cat. No. 240-181-1 Viking "Adventurer" Kit complete with tubes, less crystals and key **$54.95**

Amateur Net

SPEECH AMPLIFIER/MODULATOR — This compact speech amplifier/screen modulator has been designed to provide phone operation for the Viking "Adventurer." High gain — may be used with either crystal or dynamic microphones. Installation is simple, and only minor wiring changes are necessary in the "Adventurer" to use the 250-40. Power is obtained from the "Adventurer" — Speech Amplifier/modulator plugs directly into the rear socket on the "Adventurer" chassis. Tube complement: 12AX7 dual triode cascade speech amplifier; 12AU7 dual triode, paralleled, modulator. Dimensions: 4¾" wide x 4¾" high x 4" deep. Shipping Weight: 1 lb.

Cat. No. 250-40 Speech Amplifier/Modulator Kit, with tubes.
$12.25 Amateur Net

120 watts CW input, 80 through 10

...85 watts on 6 meters

70 watts phone, 80 through 6 meters!

Viking "Challenger"

The new Viking "Challenger" is ideal for the novice or experienced amateur for fixed station, emergency, portable, or field day use! A full size transmitter with three RF stages, the "Challenger" is designed for fast, easy tuning, excellent stability, and plenty of reserve drive! Instant bandswitching 80 through 6 meters — 70 watts phone input — 120 watts CW input 80 through 10 meters and 85 watts CW input on 6 meters! Straight through final amplifier operation even on 6 meters provides excellent efficiency and modulation characteristics.

FREQUENCY CONTROL — The "Challenger" may be controlled by plug-in crystals or any VFO delivering 5 miliwatts (8 to 10 volts across 22,000 ohms) or more output on 160 or 80 and 40 meters.

OUTPUT CIRCUIT — The wide range, Hi-"Q" output circuit is designed to handle 40 to 600 ohm resistive antenna loads and will also tune out large amounts of reactance. Plate circuit capacitor switching provides the best combination of variable and padding capacity for easy tuning and proper loading. Final amplifier has two husky 6DQ6A bridge neutralized tetrodes driven by a single 6DQ6A buffer.

"SHAPED" KEYING CIRCUIT — Designed particularly to satisfy the critical CW operator, the "Challenger's" special "LC" keying circuit provides true "shaped" CW waveform and suppresses clicks and chirps.

AUDIO SYSTEM — A built-in high gain 12AX7 dual triode speech amplifier permits the use of any crystal or high impedance dynamic microphone. A rugged 6AQ5 clamp tube modulator provides modulation levels up to 100% with clear, distinct audio response. On CW the 6AQ5 serves as a clamper, protecting the final amplifier tubes.

TVI SUPPRESSION — The cabinet of the "Challenger" is effectively shielded for TVI suppression. Power line and meter are equipped with "L" section filters. Interior harness leads and filaments are by-passed. Careful by-passing of the final amplifier and special circuit techniques minimize harmonics in the output circuit.

POWER SUPPLY — The built-in power supply delivers 550 volts DC at 275 ma., 6.3 volts AC at 5 amps, and 5 volts AC at 3 amps. Fused power line plug protects transmitter against abnormal overloads.

TUBE COMPLEMENT

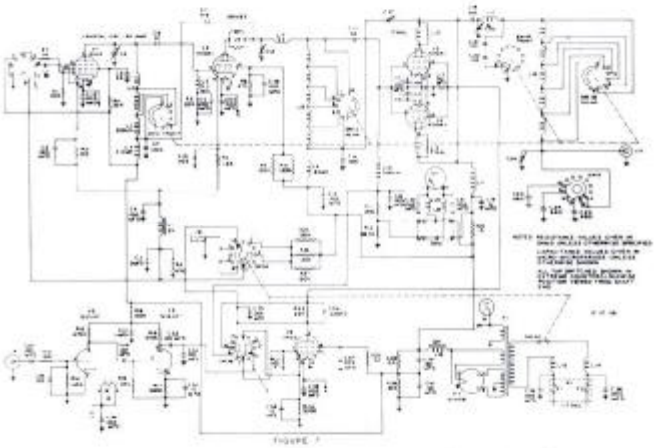
6AU6 — Oscillator
6DQ6A — Buffer-Multiplier
6DQ6A — Final Amplifier (2)
12AX7 — Cascade Speech Amplifier
6AQ5 — Clamper and Screen Modulator
5U4GB — Rectifier

SPECIFICATIONS

FREQUENCY RANGE:
80, 40, 20, 15, 10, and 6 meters

POWER REQUIREMENTS:
105-125 volts AC, 50-60 cycle single phase 270 watts maximum.

POWER INPUT:
70 Watts Amplitude Modulated Phone — 80 through 6 meters.
120 Watts Continuous Wave — 80 through 10 meters.
85 Watts Continuous Wave on 6 meters.



The Viking "Challenger" is available completely wired and tested or as an easy-to-assemble kit. The aluminum cabinet is finished in attractive maroon and grey with green nomenclature. Assembly instructions for the kit include photographs, diagrams, and step-by-step wiring directions. Wiring harness, all necessary hardware furnished — no drilling or metal work necessary. Dimensions: 13¼" wide x 9⅛" high x 10¾" deep. Net Weight: 24 lbs. Shipping Weight: 28 lbs.

Cat. No. 240-182-1 Viking "Challenger" Kit with tubes . . . . . **AMATEUR NET** **$114.75**

Cat. No. 240-182-2 Viking "Challenger" wired and tested, with tubes . . . . . **$154.75 Amateur Net**

40 watts CW

Bandswitching

Transmitter/Exciter

Viking "Navigator"

This splendid new CW Transmitter/Exciter will appeal particularly to the discriminating CW operator who requires a flexible, highly stable VFO; an excellent keying system; means for rapid QSY and bandswitching; all coupled with a substantial RF output. The "Navigator" has ample RF power to excite most high powered final amplifiers on CW or AM. Bandswitching 160 through 10 meters. Internal VFO or crystal control provides flexibility with full TVI suppression and filtering. Other features: Electronic timed sequence keying and wide range pi-network output.

FREQUENCY CONTROL — The "Navigator" is equipped with an extremely stable, temperature compensated, built-in VFO. Separate, calibrated bandspread dial scales for each of the seven bands and a 6 to 1 planetary drive mechanism results in exceptional tuning accuracy and velvet-smooth control.

The Plexiglas dial is edge-lighted — Plexiglas pointer is positioned to insure a minimum of parallax. Precise 10 kc. calibration increments on each band provide uniform and accurate dial interpolation.

OUTPUT CIRCUIT — An efficient pi-network tank circuit is used in the final amplifier. Designed to handle 40 to 600 ohm resistive antenna loads, it will also tune out large amounts of reactance. Plate circuit capacitor switching provides the best combination of variable and padding capacity for easy tuning and proper loading. Final amplifier tube is a 6146.

TIMED SEQUENCE KEYING — This highly flexible keying system applies wave shaping to the keyed amplifier stages for perfect "make" and "break" on your keyed signal. Signal clicks and chirps are eliminated, yet the "break-in" advantages of a keyed VFO are retained. The system operates so fast that a breaking station may be heard between transmitted dots! Electronically operated, this timed sequence keying system uses no relays and only one dual triode plus a rectifier tube for the grid block bias.

TVI SUPPRESSION — Effectively TVI suppressed! Power line and relay jack have double "L" type filters — all auxiliary socket, meter, key and dial lamp leads have "L" filter networks. Interior harness leads and filaments are by-passed. Careful by-passing of the final and special circuit techniques minimize harmonics in the output circuit.

POWER SUPPLY — The built-in power supply delivers 360 volts DC at 175 ma., 6.3 VAC at 3 amps, and 5 volts AC at 3 amps. Power supply is fused to provide protection from overload damage.

TUBE COMPLEMENT

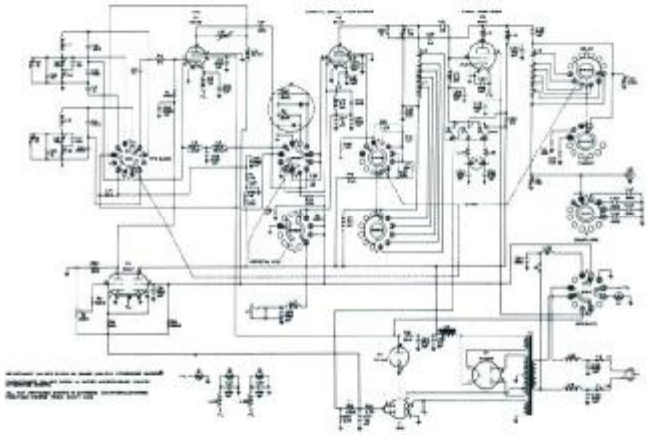
6AU6—Variable Frequency Oscillator
6CL6—Crystal Oscillator/Buffer-Multiplier
6146—Final Amplifier
12AU7—Timed Sequence Keyer
6X4—Bias Rectifier
5U4—High Voltage Rectifier
VR 150—Screen Regulator (VFO and Final)

SPECIFICATIONS

FREQUENCY RANGE:
160, 80, 40, 20, 15, and 10 meters

POWER INPUT:
40 watts Continuous Wave

POWER REQUIREMENTS:
105-125 volts AC, 50-60 cycle single phase. 120 watts maximum. Fused line plug.



The Viking "Navigator" is available completely wired and tested or as an easy-to-assemble kit. The aluminum cabinet is finished in attractive maroon and grey, with green nomenclature. Assembly instructions for the kit include photographs, diagrams and step-by-step wiring directions. Wiring harness, all necessary hardware furnished — no drilling or metal work necessary. Dimensions: 13¼" wide x 9⅛" high x 10¼" deep. Net Weight: 22 lbs. Shipping Weight: 27 lbs.

Cat. No. 240-126-1 Viking "Navigator" Kit with tubes . . . . . .

AMATEUR NET **$149.50**

Cat. No. 240-126-2 Viking "Navigator" wired and tested, with tubes . . . **$199.50 Amateur Net**

10 Watts AM input

Instant selection

of 5 frequencies

Viking 10 Meter "Messenger"

For information concerning Civil Defense Certification — See inside back cover.

The Viking "10-Meter Messenger" is a superbly-engineered transceiver in one compact package, ideally suited for use in a fixed location or for under-dash mounting in a mobile vehicle or boat. The "10-Meter Messenger" provides instant selection of five pre-tuned frequencies in the range of 29.4 to 29.7 megacycles, within a 300 kc segment of the 10-meter band.

Designed with 10 tubes (including rectifier), the "10-Meter Messenger" is completely crystal controlled. The superheterodyne receiver is extremely sensitive, enabling you to hear signals clearly which would be lost in less sensitive equipment. Greater selectivity reduces interference from adjacent channels . . . keeps your received signal clear and crisp for greater intelligibility . . . permits greater communication distance. Built-in automatic noise limiter (ANL) suppresses ignition and other electrical noises from neon signs, power lines, etc. . . . automatic volume control effectively prevents distortion at close ranges. The automatic "Squelch" control lets you set the receiver sensitivity as desired, to eliminate annoying background noises.

The transmitter is designed with a 7054 crystal oscillator coupled to a high gain 7061 final amplifier . . . puts out a clean, crisp, well-modulated signal! Rugged push-to-talk ceramic microphone will not be affected by either moisture or heat . . . sturdy die-cast front panel and heavy-gauge steel cabinet help protect the unit from accidental damage from shock or vibration. Other features include a wide range pi-L network output circuit; automatic "Transmit" indicator; self-contained power supply.

The "10-Meter Messenger" is exceptionally easy to install anywhere — under the dashboard of an automobile (with little or no sacrifice of leg room), in a boat, or practically anywhere you choose. Dual voltage units will operate on either 6V DC or 115V AC; or 12V DC and 115V AC with just the switch of a power cord (furnished with the unit). The "10-Meter Messenger" comes completely equipped with power cords, tubes, microphone and crystals for 29,640 kc, the national calling and emergency frequency. Up to 4 additional crystal pairs may be installed for other frequencies for routine operation.

SPECIFICATIONS

FREQUENCY RANGE:
Pre-tuned for 29.4 to 29.7 mcs.

POWER INPUT:
10 Watts Amplitude Modulated Phone

POWER REQUIREMENTS:
(3 models Available)
6V D.C. and 115V A.C.
12V D.C. and 115V A.C.
115V A.C. only.
80 watts maximum.

FUSE PROTECTION
Fused power cord

TUBE COMPLEMENT

6BJ6—R.F. Amplifier
12BS6—Mixer — Crystal Oscillator
6BJ6—I.F. Amplifier
6AL5—Detector, AVC, ANL
12AU7—First Audio and Speech Amplifier
6AW8—Second Audio Amplifier, Squelch
12AB5—Modulator
7054—Crystal Oscillator
7061—Power Amplifier
12BW4—Rectifier

The Viking "10-Meter Messenger" is available wired and tested only in a compact grey wrinkle-finish cabinet with a handsome chrome-plated front panel. Dimensions: 5⅝" high x 7" wide x 11⅜" deep. Net weight: 12¼ lbs. Shipping weight: 17 lbs.

Cat. No. 242-201 115V only . . . Viking "10-Meter Messenger" complete with tubes, microphone, and one pair of crystals . . . . . **$129.75 Amateur Net**

Cat. No. 242-202 115V and 6V . . . "10-Meter Messenger" complete with tubes, microphone, and one pair of crystals . . . . . **$139.75 Amateur Net**

Cat. No. 242-203 115V and 12V . . . "10-Meter Messenger" complete with tubes, microphone, and one pair of crystals . . . . . **$139.75 Amateur Net**

10 Meter "Messenger" Accessories

Cat. No. 250-801 Automotive or marine suppression kit. Suppresses electrical noise generated by ignition and electrical system . . . . . **$13.50 Amateur Net**

Cat. No. 251-828 Universal dash mounting kit. For mounting the 10 Meter "Messenger" under the dashboard of car, truck, or boat . . . . . **$2.50 Amateur Net**

Cat. No. 251-830 Sturdy etched aluminum carrying handle. Easily mounted. Convenient swing-away feature when not in use . . . . . **$1.50 Amateur Net**

150 watts CW

100 watts phone

Bandswitching 6 and 2 meters

Viking "6N2"

For information concerning Civil Defense Certification — See inside back cover.

This compact VHF transmitter offers instant bandswitching coverage of both 6 and 2 meters. The Viking "6N2" is completely shielded and effectively TVI suppressed, and may be used with the Viking "Ranger", Viking "Valiant" or similar power supply-modulator combinations capable of at least 6.3 VAC at 3.5 amp., 300 VDC at 70 ma., 300 to 750 VDC at 200 ma. and 30 watts or more of audio. Power input of the Viking "6N2" is rated at 150 watts CW and 100 watts AM phone.

FREQUENCY CONTROL — The Viking "6N2" may be operated by external VFO or built-in crystal control. 8 to 9 mc crystals are used in a pentode oscillator, which doubles in the plate circuit. This avoids tricky overtone circuits, eliminates critical adjustment and prevents frequency output which is not harmonically related to the fundamental of the crystal. VFO operation may be obtained simply by plugging in an external VFO with an 8-9 mc output and turning the VFO/Crystal switch to the VFO position. Provision for zeroing the VFO is also provided.

OUTPUT CIRCUIT — The final amplifier uses a type 5894 dual tetrode in a push-pull circuit. It is capable of 150 watts input on CW or FM and 100 watts input on AM phone. The final tank is a dual band device and requires no switching when changing bands. High efficiency is obtained by the use of silver plated balanced tank circuits with parallel lines for maximum efficiency on 2 meters. The output link, which is adjustable, is also a two band device. Series capacitive reactance compensation is incorporated for maximum coupling flexibility.

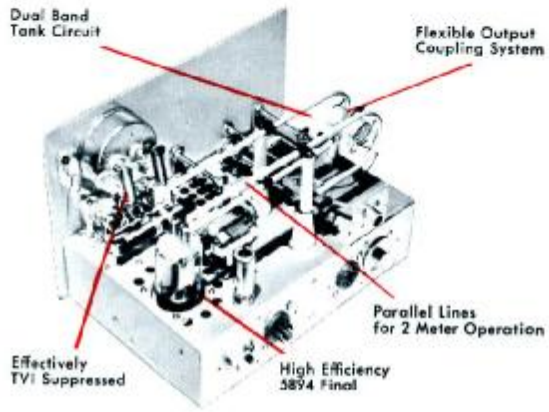
"SHAPED" KEYING CIRCUIT — Designed particularly to satisfy the critical CW operator, the "6N2" is equipped with a special "LC" keying circuit which provides true "shaped" CW waveform and suppresses clicks and chirps.

TVI SUPPRESSION — The cabinet of the "6N2" is effectively shielded for TVI suppression. Power line and meter are equipped with "L" section filters. Interior harness leads and filaments are by-passed. Careful by-passing of the final amplifier and special circuit techniques minimize harmonics in the output circuit.

NOTE: Other Viking equipment is available for use with the Viking "6N2". On Pages 22 and 23 you'll find specifications on the Viking "6N2" Thunderbolt . . . on Page 27 you'll find details on two fine "6N2" accessories: the "6N2" VFO and the "6N2" Converter.

TUBE COMPLEMENT

6U8 — (pentode section) — crystal — oscillator — doubler
6U8 — (triode section) — tripler
6360 — tripler-driver
5894 — final amplifier
6AQ5 — clamper



The Viking "6N2" is available completely wired and tested or as an easy-to-assemble kit. Cabinet is finished in attractive maroon and grey with green nomenclature. Complete kit includes assembly instructions, photographs, diagrams, and step-by-step wiring directions. Wire and necessary hardware furnished — no drilling or metal work necessary. Dimensions: 13⅛" wide x 8⅜" high x 8½" deep. Net Weight: 10 lbs. Shipping Weight: 14 pounds.

Cat. No. 240-201-1 Viking "6N2" Kit with tubes, less crystals, key and microphone . . . . . **AMATEUR NET** **$129.50**

Cat. No. 240-201-2 Viking "6N2" wired and tested with tubes, less crystals, key and microphone **$169.50**
Amateur Net

75 watts CW input

65 watts phone

Completely self-contained

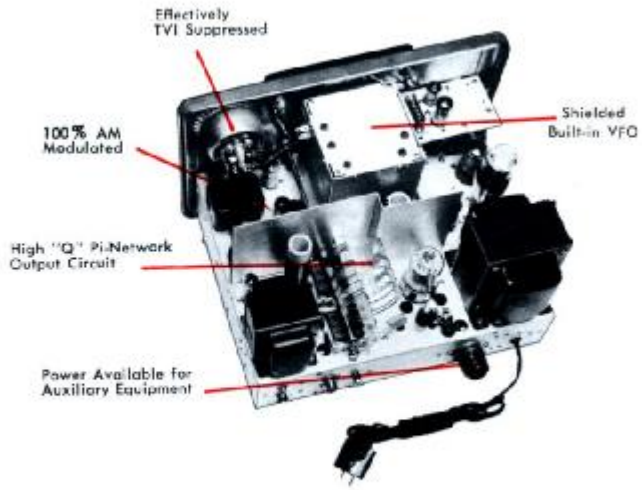
Viking "Ranger II"

Effectively TVI suppressed, and completely self-contained, the Viking "Ranger II" transmitter/exciter is available as a complete, easily assembled kit or as a wired and tested unit. A phone and CW transmitter for 6 through 160 meters, the "Ranger II" may also be used as a flexible exciter without modification.

As a transmitter, the "Ranger II" is a rugged and compact 75 watt CW input or 65 watt phone unit. The "Ranger II" has a pi-network coupling system that will match antenna loads from 50 to 500 ohms and will tune out large amounts of reactance. Single-knob bandswitching on six amateur bands: 160, 80, 40, 20, 15, 10 and 6 meters — built-in VFO or crystal control. Timed sequence (grid block) keying provides ideal "make" or "break" on your keyed signal, yet the "break-in" advantages of a keyed VFO are retained.

As an exciter, the "Ranger II" will drive any of the popular kilowatt level tubes and will provide a high quality speech driver system for high powered modulators. Control functions for the high powered stage may be handled right at the exciter — no modification required to shift from transmitter to exciter operation. A nine pin receptacle on the rear of the transmitter brings out TVI filtered control and audio leads for exciter operation. This receptacle also permits the "Ranger II" to be used as a filament and plate power source, and also as a modulator for auxiliary equipment such as the Viking "6N2" VHF transmitter.

FREQUENCY CONTROL — The "Ranger II" is equipped with an extremely stable, temperature compensated built-in VFO. Separate, calibrated, bandspread dial scales for each of the seven bands and a 6 to 1 planetary drive mechanism result in exceptional tuning accuracy and velvet smooth control. Plexiglas dial is edgelighted — Plexiglas pointer is positioned to insure a minimum of parallax. Precise 10 kc calibration increments on each band provide uniform and accurate dial interpolation.



TUNING — The "Ranger II's" basic tuning controls are located on the VFO dial escutcheon. QSY within the phone or CW portion of a band is usually possible by merely changing the VFO frequency setting. For larger frequency excursions, simply touch up the grid (Buffer) tuning, adjust loading, and dip the final.

OUTPUT CIRCUIT — An efficient pi-network tank circuit is used in the final amplifier. Designed to handle 50 to 500 ohm resistive antenna loads it will also tune out large amounts of reactance. Plate circuit capacitor switching provides the best combination of variable and padding capacity for easy tuning and proper loading. Final amplifier tube is a 6146.

TIMED SEQUENCE KEYING — This highly flexible keying system applies wave shaping to the keyed amplifier stages for perfect "make" and "break" on your keyed signal. Signal clicks and chirps are eliminated, yet the "break-in" advantages of a keyed VFO are retained. The system operates so fast that a breaking station may be heard between transmitted dots! Electronically operated, this timed sequence keying system uses no relays and only one dual triode plus a rectifier tube for the grid block bias.

AUDIO SYSTEM — An all-triode speech amplifier permits the use of any crystal or high impedance dynamic microphone. Push-pull 7027A modulators provide 100% modulation, response is limited to 250-3000 cycles for maximum communication effectiveness.

TVI SUPPRESSION — Completely TVI suppressed, the "Ranger II" cabinet is electrically sealed with flexible monel braid on the inside of the front panel and large cabinet overlap. A cup type shield seals the meter, and spring contact washers on the front panel shafts prevent possible radiation from shaft clearance openings. Power line and relay jack have double L type filters; all auxiliary socket, meter, dial lamp, key, and meter lamp leads equipped with L filter networks. To minimize chassis harmonics, interior harness leads and filaments are by-passed. Careful bypassing of the final and special circuit techniques minimize harmonics in the output circuit.

POWER SUPPLIES — Self-contained high and low voltage power supplies use choke input filtering — high voltage supply delivers 500 to 525 V DC to the final and modulators — low voltage supply delivers 300 V DC for the exciter and speech stages. A separate relay jack provides 115 V AC for antenna change-over and control relays, and is energized by the "operate" switch on the front panel.

SPECIFICATIONS

FREQUENCY RANGE:

160, 80, 40, 20, 15, 10 and 6 meters

POWER REQUIREMENTS:

105-120 V AC, 50-60 cycles, single phase, 260 watts maximum.

POWER INPUT:

75 Watts Continuous Wave
65 Watts Amplitude Modulated Phone

FUSE PROTECTION:

Transmitter fuses are located in the 115 V. power plug.

TUBE COMPLEMENT

6AU6—Variable Frequency Oscillator
6CL6—Crystal Oscillator/VFO Isolator
6CL6—Buffer/Doubler
5763—6 Meter Doubler
12AU7—Keyer Tube
12AX7—Dual Triode Speech Amplifier
12AU7—Dual Triode Audio Driver
OA2—Voltage Regulator
6146—Final Amplifier
6AQ5—Clamper
7027A—Push-Pull Modulators (2)
6AL5—Bias Rectifier
6AX5GT—Low Voltage Rectifier
5R4GY—High Voltage Rectifier

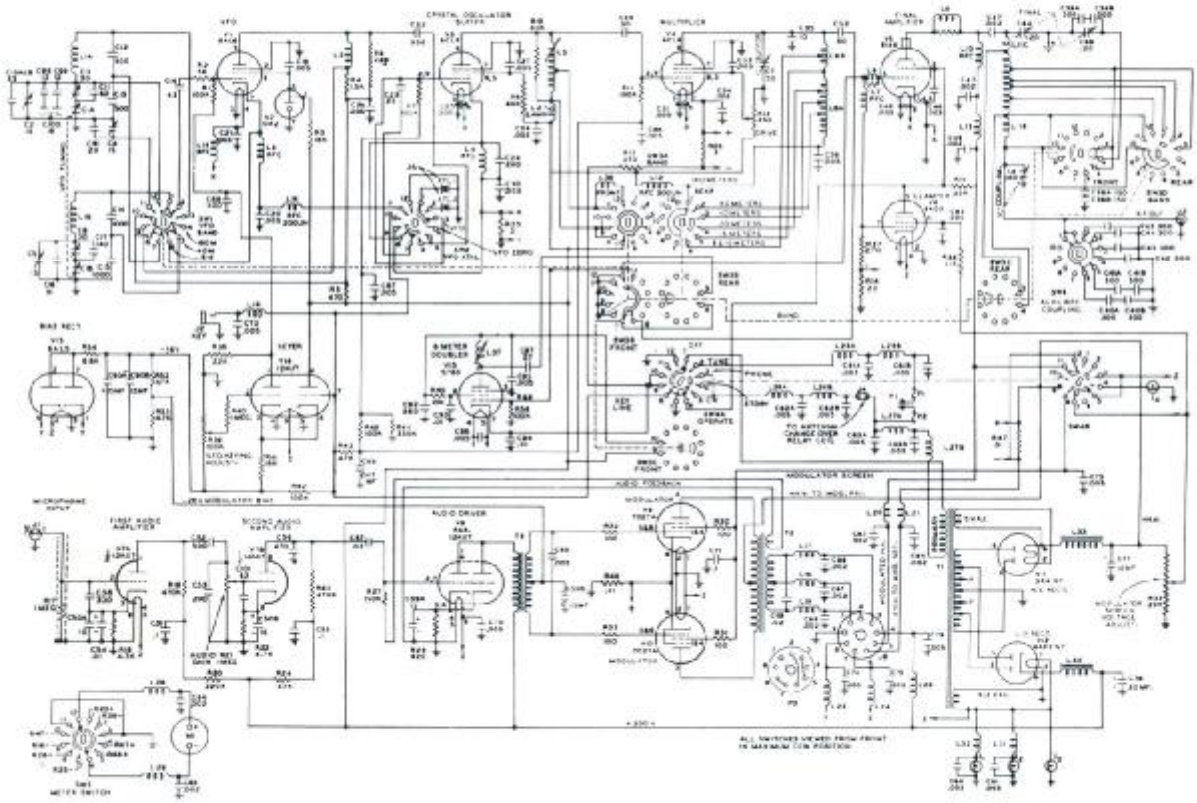
The Viking "Ranger II" is available completely wired and tested or as a complete, ready to assemble kit. The 18 gauge steel cabinet is finished in attractive two-tone grey, with maroon knobs and nomenclature. Assembly instructions for the kit include photographs, diagrams and step-by-step wiring directions — wiring harness, all necessary hardware, and connectors furnished — no drilling or metal work necessary. Dimensions: 15½" wide x 9⅝" high x 14" deep. Net Weight: 43 pounds. Shipping Weight: 54 pounds.

Cat. No. 240-162-1 Viking "Ranger II" Kit with tubes, less crystals, key and microphone.

AMATEUR NET $249.50

Cat. No. 240-162-2 Viking "Ranger II" wired and tested with tubes, less crystals, key and microphone..... **$359.50 Amateur Net**

For information concerning Civil Defense Certification —See inside back cover.



275 watts CW and SSB*

200 watts phone

Bandswitching 160 through 10 meters

* with an auxiliary SSB exciter

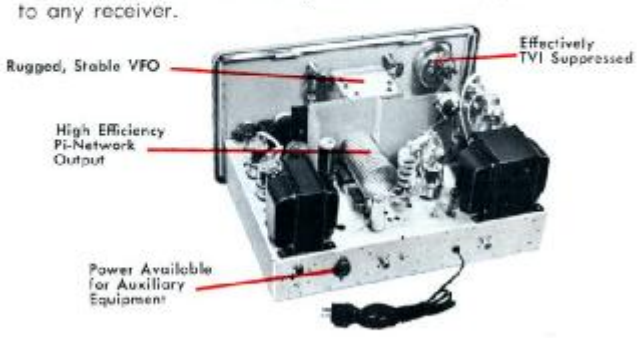
Viking "Valiant"

This compact transmitter gives you outstanding flexibility and performance . . . power to punch through terrific QRM! Built-in VFO or crystal controlled, the "Valiant" is completely bandswitching on all amateur bands 160 through 10 meters . . . delivers a full 275 watts input on CW and SSB (with an auxiliary SSB exciter) and 200 watts on AM. VFO is temperature compensated and extremely stable — operates in the 1.75 to 2.0 mc and 7.0 to 7.45 mc ranges.

The "Valiant" is designed with a high efficiency pi-network tank circuit which will match antenna loads from 50 to 600 ohms and tune out large amounts of reactance — final tank coil is silver plated. Other features: complete TVI suppression; timed sequence (grid block) keying; high gain push-to-talk audio system for use with high impedance crystal or dynamic microphones; low level audio clipping; built-in low pass audio filter; self contained power supplies; and single control mode switching.

As an exciter, the "Valiant" will drive any of the popular kilowatt level tubes and will provide a high quality speech driver system for high powered modulators. A nine pin receptacle on the rear of the transmitter brings out TVI filtered control and audio leads for exciter operation. This receptacle permits the "Valiant" to be used as a filament and plate power source, and also as a modulator for auxiliary equipment such as a VHF transmitter.

FREQUENCY CONTROL — The "Valiant" may be operated by built-in VFO or crystal control. The VFO is temperature compensated and extremely stable . . . each band has separate bandspread calibration. Dual tank circuit operates on 1.7 to 2.0 and 7.0 to 7.45 mcs with separate compensation for each frequency range. Excellent tuning accuracy and extremely smooth control is possible with the 6 to 1 planetary drive mechanism which controls tuning. Plexiglas dial is edge-lighted, Plexiglas pointer is positioned to insure a minimum of parallax. Each band is divided into precise 10 kc increments for accurate dial readings and interpolation. The broad range of the VFO permits coverage of an entire band and VFO is easy to tune . . . may be zeroed to any receiver.



TUNING — The "Valiant's" basic tuning controls are located on the VFO dial escutcheon. QSY within the phone or CW portion of a band is usually possible by merely changing the VFO frequency setting. For larger frequency excursions, simply touch up the exciter tuning, adjust loading, and dip the final.

OUTPUT CIRCUIT — An efficient pi-network tank circuit with a silver plated inductor is used in the final amplifier. Designed to handle 50 to 600 ohm resistive antenna loads, it will also tune out large amounts of reactance. Final amplifier tubes are three 6146's. RF output is available through a standard SO-239 coaxial connector at the rear of the chassis.

AUDIO SYSTEM — The "Valiant" has a high gain audio circuit which provides reserve gain for use with high impedance crystal or dynamic microphones and features push-to-talk control. Low level audio clipping prevents overmodulation and increases average modulation level and intelligibility. Built-in low pass audio filter restricts the audio range to 3500 CPS, thus providing maximum communication effectiveness with minimum bandwidth.

TIMED SEQUENCE KEYING — This highly flexible keying system applies wave shaping to the keyed amplifier stages for perfect "make" and "break" on your keyed signal. Signal clicks and chirps are eliminated, yet the "break-in" advantages of a keyed VFO are retained. The system operates so fast that a breaking station may be heard between transmitted dots! Electronically operated, this timed sequence keying system uses no relays and only one dual triode plus a rectifier tube for the grid block bias.

TVI SUPPRESSION — Completely TVI suppressed, the "Valiant" cabinet is electrically sealed with flexible monel braid on the inside of the front panel and large cabinet overlap — a cup type shield seals the meter. Power line and relay jack have double "L" type filters — all auxiliary socket, meter, key, and dial lamp leads have "L" filter networks. Interior harness leads and filaments are by-passed. Careful by-passing of the final and special circuit techniques minimize harmonics in the output circuit.

POWER SUPPLIES — Self-contained high voltage power supply uses choke input filtering — delivers 620 volts at 500 ma. Self-contained low voltage power supply will deliver 300 volts at 90 ma and 6.3 volts AC at 6 amps. A separate relay jack provides 115 V AC for antenna changeover and control relays, and is energized by the "operate" switch on the front panel or the push-to-talk circuit.
Two VR-105 voltage regulators are used to regulate the final amplifier screen voltage in SSB operation and the modulator screen voltage during AM operation. VFO screen voltage is regulated by an OA2 voltage regulator.

SPECIFICATIONS

FREQUENCY RANGE:
160, 80, 40, 20, 15, and 10 meters

POWER REQUIREMENTS:
105-120 V AC, 50-60 cycles, single phase, 600 watts maximum.

POWER INPUT:
275 Watts Continuous Wave
275 Watts Single Sideband (With auxiliary SSB exciter)
200 Watts Amplitude Modulated Phone

FUSE PROTECTION:
Transmitter fuses are located in the 115 V. power plug. Separate internal fuse furnishes protection for low voltage power transformer and associated components.

TUBE COMPLEMENT

6AU6—Variable Frequency Oscillator
0A2—VFO Screen Voltage Regulator
6CL6—Crystal Oscillator/VFO Isolator
5763—R.F. Driver
6146—Parallel Final Amplifier, Bridge Neutralized (3)
12AX7—Cascade Speech Amplifier
6AL5—Audio Clipper
6C4—Audio Amplifier
12AU7—Parallel Audio Driver
6146—Push-Pull Class AB2 Modulator (2)
12AU7—Timed Sequence Keyer
6AQ5—Clamper
866A—High Voltage Rectifiers (2)
5V4G—Low Voltage Rectifier
6BY5GA—Bias Rectifier
VR-105—Screen Voltage Regulators (2)

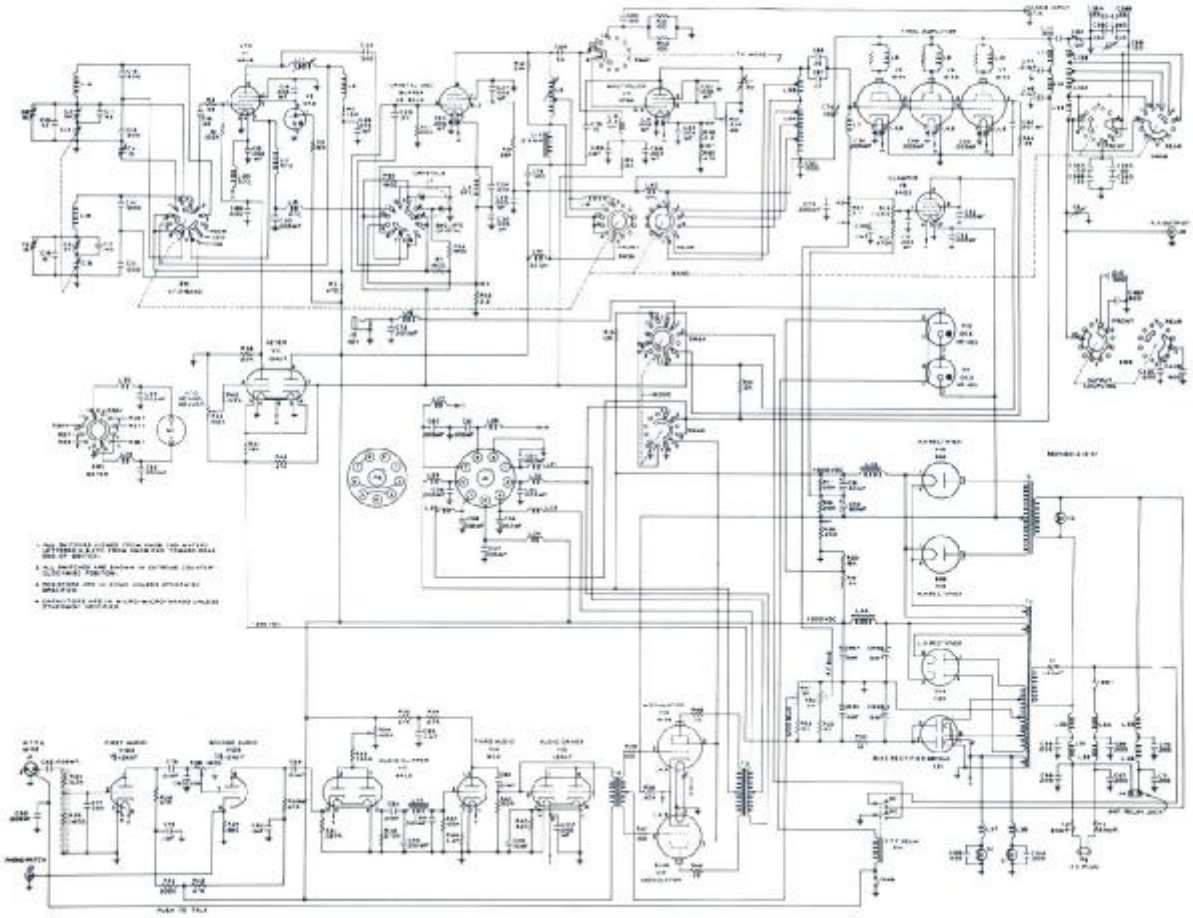
The Viking "Valiant" is available completely wired and tested or as an easy to assemble kit. The 18 gauge steel cabinet is finished in attractive maroon and grey, with green nomenclature. Complete kit includes assembly instructions, photographs, diagrams and step-by-step wiring directions. Wiring harness, all necessary hardware furnished — no drilling or metal work necessary. Dimensions: 21" wide x 11⅝" high x 16¼" deep. Net Weight: 73 lbs. Shipping Weight: 83 lbs.

Cat. No. 240-104-1 Viking "Valiant" Kit with tubes, less crystals, key and microphone . . . . . .

AMATEUR NET $349.50

Cat. No. 240-104-2 Viking "Valiant" wired and tested with tubes, less crystals, key and microphone . . . . . **$439.50 Amateur Net**

For information concerning Civil Defense Certification —See inside back cover.



600 watts CW

500 watts phone

500 watts SSB*

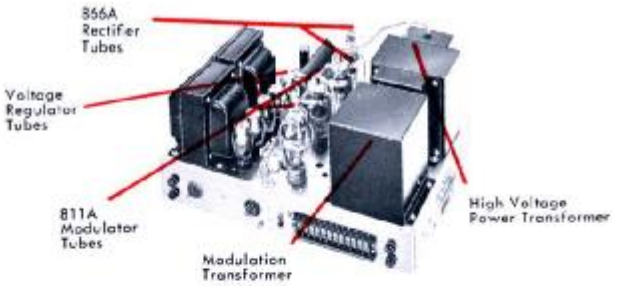
* with an auxiliary SSB exciter

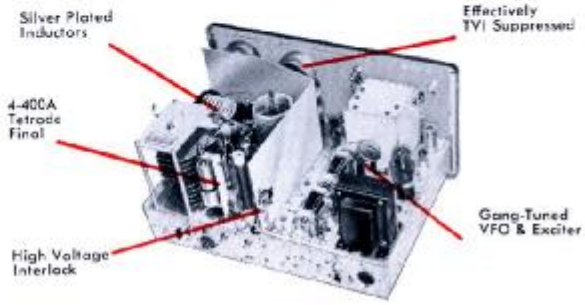
Viking "Five Hundred"

The Viking "Five Hundred" is a complete 500 to 600 watt transmitter for the 80 through 10 meter bands. All exciter stages are ganged to the VFO tuning . . . unit is designed throughout for outstanding operating convenience and flexibility. The "Five Hundred" consists of two compact units: an RF unit small enough to place on your operating desk beside your receiver; and a power supply/modulator unit so compact it may be placed in most any convenient location. All operating controls are located on the front panel of the RF unit within easy reach of the operator.

The Viking "Five Hundred" has been designed for either crystal or VFO control. Instant bandswitching, the "Five Hundred" is effectively TVI suppressed and filtered . . . contains a Pi-L network output circuit, with silver plated final tank coil, for loading virtually any antenna system. Safety and protective features include: a tamperproof, key-operated main switch; cabinet interlocks; excitation and bias failure protection; fused filament and plate supplies; and high voltage time delay.

FREQUENCY CONTROL — The "Five Hundred" may be operated by built-in VFO or crystal control. The VFO is temperature compensated and extremely stable . . . covered crystal socket accommodates two type FT243 quartz crystals. Each band on the VFO dial has separate bandspread calibration, and a 6 to 1 planetary drive mechanism permits exceptional tuning accuracy and extremely smooth control. Plexiglas dial is edge-lighted, Plexiglas pointer is positioned to insure a minimum of parallax. Each band is divided into precise 10 kc increments for accurate dial readings and interpolation.





TUNING — All exciter stages are ganged to the VFO tuning, eliminating the need to tune intermediate stages between the VFO and final. The broad range of the VFO permits coverage of an entire band and VFO is easy to tune . . . may be zeroed to any receiver.

OPERATING CONTROLS — All operating controls for the "Five Hundred" are located on the front panel of the RF unit within easy reach of the operator.

OUTPUT CIRCUIT — The final amplifier uses a type 4-400A high efficiency tetrode with low driving power requirements working into an efficient Pi-L network. Final tank coil is silver plated . . . network will handle unbalanced 52 ohm loads with standing wave ratios up to 3:1; or unbalanced resistive loads of 15-200 ohms. The pi-section provides excellent reduction of harmonics of the carrier frequency — the "L" section provides from 15 to 20 db additional attenuation of second harmonic energy and reduces higher order harmonic energy by an even greater amount.

AUDIO SYSTEM — The "Five Hundred" has a high gain audio circuit which provides reserve gain for use with high impedance crystal or dynamic microphones and features push-to-talk control. A 600 ohm phone patch input is independent of audio gain control — speech filter restricts frequency response to 200-3500 CPS for maximum communication effectiveness, with minimum bandwidth. Low level audio clipping prevents overmodulation and increases average modulation level and intelligibility.

TIMED SEQUENCE KEYING — This highly flexible keying system applies wave shaping to the keyed amplifier stages for perfect "make" and "break" on your keyed signal. Signal clicks and chirps are eliminated, yet the "break-in" advantages of a keyed VFO are retained. The system operates so fast that a breaking station may be heard between transmitted dots! Electronically operated, this timed sequence keying system uses no relays and only one dual triode plus a rectifier tube for the grid block bias.

TVI SUPPRESSION — In addition to complete shielding and the use of double "L" section filters in every lead, the amplifier is electrically sealed with flexible monel braid — cup-type shields seal the meters. Interior harness leads and filaments are by-passed. Careful by-passing of the final and special circuit techniques minimize harmonics in the output circuit.

POWER SUPPLIES — Power supplies are located in a separate cabinet which is connected to the RF unit by plug-in cables. (This cabinet also contains the push-pull modulator tubes and the modulation transformer.) Four VR150 and one VR105 voltage regulators are used to regulate the final amplifier screen voltage during SSB operation. VFO screen voltage is regulated by an 0A2 voltage regulator.

SPECIFICATIONS

FREQUENCY RANGE:
80, 40, 20, 15, and 10 meters

POWER REQUIREMENTS:
115V AC, 2 wire or 230 V AC, 3 wire, 50-60 cycles, single phase. 1500 watts maximum.

POWER INPUT:
600 Watts Continuous Wave
500 Watts Amplitude Modulated Phone
500 Watts Single Sideband (P.E.P. using accessory SSB exciter delivering 3 watts across 52 ohms)

FUSE PROTECTION:
The following fuses are located in the power supply: RF Filament Supply Fuse; Low Voltage Supply Fuse; and Two High Voltage Supply Fuses.

TUBE COMPLEMENT

6AU6—Variable Frequency Oscillator
0A2—Voltage Regulator for VFO
6CL6—Buffer
6CL6—Multiplier
5763—RF Driver
4-400A—Power Amplifier
12AU7—Keyer
807—Clamper
12AX7—1st & 2nd Audio Amplifier
6AU6—3rd Audio Amplifier
6AL5—Audio Peak Clipper
6B4G—Audio Driver
811A—Modulator (2)
6AX5GT—Bias Rectifier
5U4G—Low Voltage Rectifier
866/866A—High Voltage Rectifier (2)
VR105—Voltage Regulator
VR150—Voltage Regulators (4)

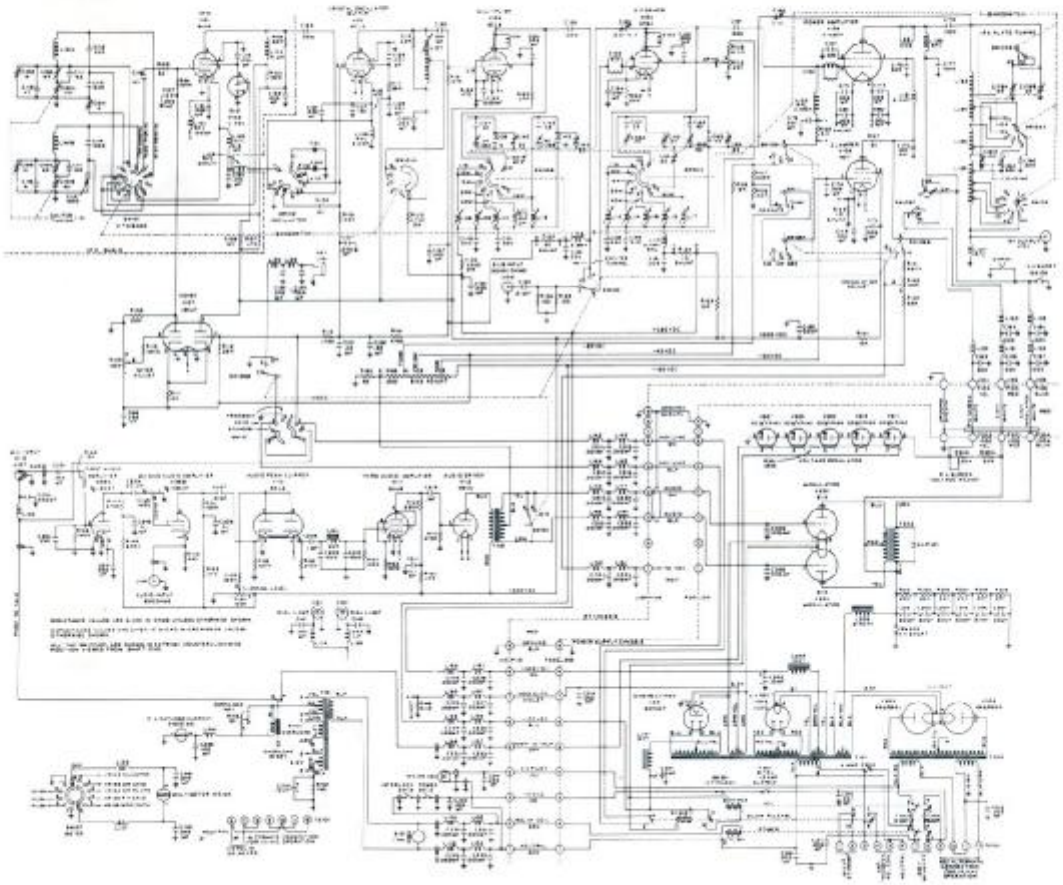
The Viking "Five Hundred" is available completely wired and tested or as an easy to assemble kit. The RF unit is housed in an 18 gauge steel cabinet, finished in attractive maroon and grey, with green nomenclature. The power supply cabinet is finished in maroon enamel. Dimensions: RF Unit — 21" wide x 11⅜" high x 16½" deep. Power Supply — 20⅜" wide x 15¾" high x 10⅜" deep. Total Net Weight: 173 lbs. Shipping Weight: 200 lbs.

Cat. No. 240-500-1 Viking "Five Hundred" Kit complete with tubes, less crystals, key and microphone . . . . . .

AMATEUR NET **$749.50**

Cat. No. 240-500-2 Viking "Five Hundred" wired and tested with tubes, less crystals, key and microphone . . . . . **$949.50 Amateur Net**

For information concerning Civil Defense Certification —See inside back cover.



500 watts P.E.P.*

500 watts CW

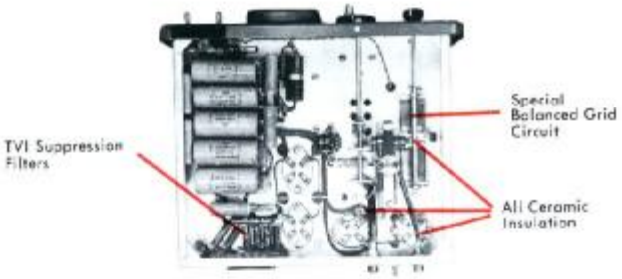
200 watts AM linear

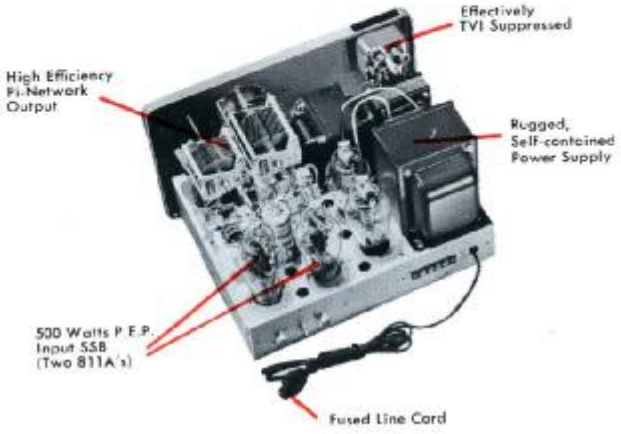
* with an auxiliary SSB exciter

Viking "Courier"

The new Viking "Courier" delivers full communication power — rated a solid one-half kilowatt P.E.P.* input as a Class B linear amplifier; one-half kilowatt input on CW or 200 watts in AM linear mode; in a completely self-contained desk-top package. The Viking "Courier" may be driven by the Viking "Challenger" "Ranger," "Invader" or other unit of comparable output. Continuous coverage 3.5 to 30 megacycles (bandswitched) — high efficiency pi-network output circuit. Rotary tank coil and plate tuning capacitor are ganged to single control and provide uniform loaded tank circuit Q throughout operating range. Unique laboratory stability tests assure an amplifier with exceptional overall stability appreciably superior to other amplifiers. Fully TVI suppressed and filtered, completely self-contained with built-in power supply.

Cabinet type and dimensions are the same as the Viking "Ranger," providing a very compact and neatly packaged desk top layout when used together. Operating controls and meter are easily accessible for operation and testing. Molded rubber feet attached to cabinet base protect table top and help to insure adequate ventilation.





"COURIER" POWER GAIN

Driver		Power increase-times
Adventurer	CW	10.0
Challenger	CW	4.1
Challenger	AM	2.8**
Ranger	CW	6.6
Ranger	AM	2.5
Viking I & II	CW	2.8
Invader	SSB	2.5
Invader	CW	2.5
Invader	AM	2.2

**Based on output power.

EXCITATION REQUIREMENTS — Drive requirements are 5 to 35 watts depending upon the mode and frequency desired. The Viking "Courier" may be driven by the Viking "Challenger" "Ranger," "Invader" or other unit of comparable output. Use of the Viking I, II or similar unit as an exciter for the Viking "Courier" requires use of the Johnson Power Reducer, **Cat. No. 250-29.**

OPERATING CONTROLS — The operating controls for the "Courier" are conveniently located on the front panel within easy reach of the operator. These controls include: grid tuning and bandswitch, plate tuning with slide rule indicator dial; filament switch; plate switch, coarse and fine coupling controls. Amplifier grid and plate current for both Class B and C operation may be read as desired with the flip of a switch on the front panel.

OUTPUT CIRCUIT — The Viking "Courier" linear amplifier employs two Type 811A triode tubes in parallel. The pi-network output circuit is designed to match nominal 40 to 600 ohm antenna loads and will tune out large amounts of load reactance as well. A fan is located on the inside of the amplifier cabinet to cool the unit and provide extended tube and component life.

TVI SUPPRESSION — In addition to complete shielding and the use of double "L" section filters in all outgoing leads, the Viking "Courier" cabinet is electrically sealed with flexible monel braid. A cup-type shield seals the meter — interior harness leads and filaments are by-passed. Careful by-passing of the final and special circuit techniques minimize harmonics in the output circuit.

POWER SUPPLIES — The high voltage power supply uses two 866-A rectifier tubes. Built-in blocking bias is provided for SSB linear operation.

SPECIFICATIONS

FREQUENCY RANGE:

Continuous coverage 3.5 through 30 megacycles (Bandswitched).

POWER INPUT:

500 Watts CW..... Class C
200 Watts AM Linear..... Class B
500 Watts P.E.P.* Linear..... Class B

POWER REQUIREMENTS:

115 volts AC, 50-60 cycle single phase. 675 watts maximum. Fused line plug.

TUBE COMPLEMENT

811A triode—Final Amplifier (2)

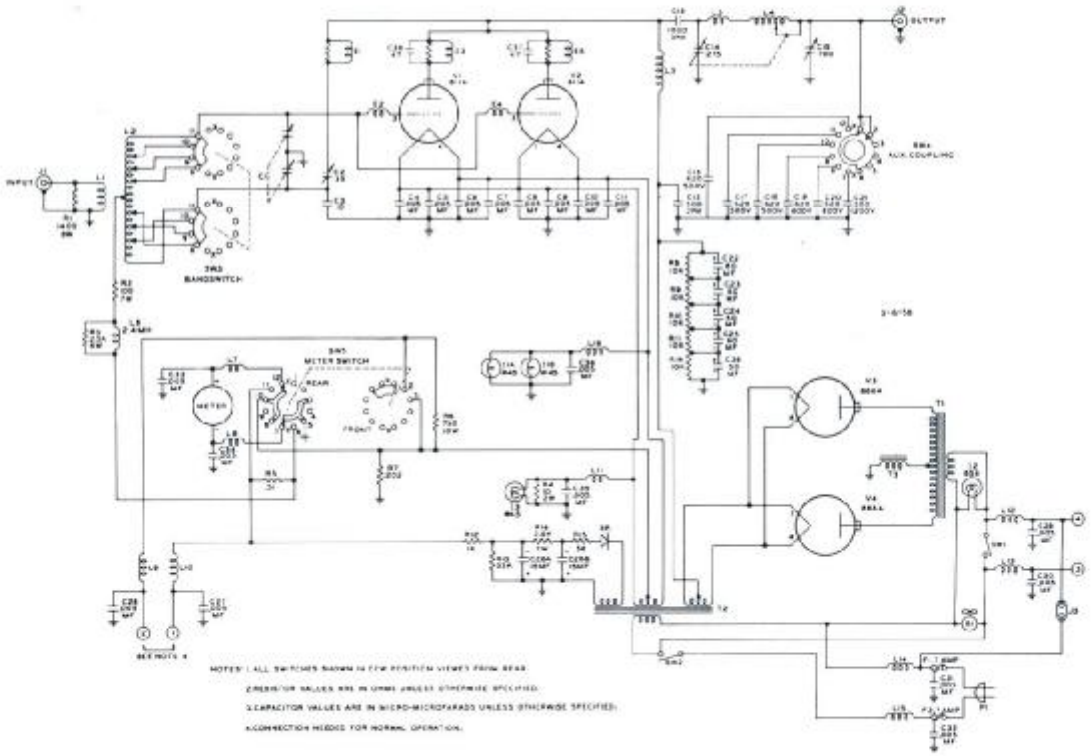
866A—High Voltage Rectifier (2)

The Viking "Courier" is available as a completely wired and tested unit only. The 18 gauge steel cabinet is finished in attractive maroon and grey, with green nomenclature. Dimensions: 15½" wide x 9⅝" high x 14" deep. Net Weight: 58 lbs. Shipping Weight: 68 lbs.

Cat. No. 240-352-2 Viking "Courier" wired and tested with tubes.....

AMATEUR NET **$289.50**

For information concerning Civil Defense Certification —See inside back cover.



200 watts P. E. P. SSB

200 watts CW

90 watts AM phone

Viking "Invader"

Here's the transmitter with the sharp, penetrating signal you've been waiting for — plus **more** exclusive operating and convenience features than any other Transmitter on the market today! The "Invader" offers instant bandswitching, full coverage 80 through 10 meters — no extra crystals to buy — no retuning necessary — delivers a solid 200 watts CW input; 200 watts SSB input; 90 watts input on AM! Unwanted sideband suppression is 60 db or better! Built-in VFO is differentially compensated. Exclusive RF controlled audio AGC and ALC (limiter type) provide greater average speech power — high gain push-to-talk audio system has plenty of reserve gain for either crystal or dynamic microphones. VOX and anti-trip circuits are extremely smooth in operation — built-in anti-trip matching transformer — adjustable VOX time delay circuit. Mixer-type shaped keying is crisp, sharp — click and chirp free. Single knob wide range pi-network output circuit — fully TVI suppressed. Blocking and operating bias provide noise-free T-R switch operation. Heavy duty power supply is completely self-contained. New functional styling, simplified tuning, and slide rule dial with individually calibrated bands provide unequalled operating convenience. Hinged cabinet top for easy access. Provision for plugging Johnson "Phone Patch" (Cat. No. 250-46) directly into audio input. The "Invader" may also be used as an exciter for the Viking "Courier", "Thunderbolt," or the Viking "Kilowatt".

Superior to phasing-type units ... obsoletes all other filter types!

EXCLUSIVE — Now, for the first time, not only better audio fidelity — but balanced audio response in a filter-type transmitter. The only equipment on the market using a specially developed high frequency, symmetrical, multi-section band-pass crystal filter for more than 60 db sideband suppression — more than 55 db carrier suppression! Select either upper or lower sideband instantly with a front panel "mode" switch.

FILTER-TYPE SIDEBAND — Highly stable operation and unusually sharp response on sideband is obtained by the use of a specially developed, multi-section high frequency band-pass crystal filter. Exclusive with the "Invader", this special crystal filter provides unwanted sideband suppression of 60 db and carrier suppression of 55 db or more. Select either upper or lower sideband instantly, with front panel "mode" switch.

FREQUENCY CONTROL — Instant band-switching coverage 80, 40, 20, 15 and 10 meters — no extra crystals or retuning required. Large, easy-to-read slide rule dial individually calibrated for each band . . . bands over-lap slightly to further simplify tuning. Highly stable, built-in VFO is differentially compensated and voltage regulated—factory adjusted for maximum stability . . . no warm-up drift! (Stability —better than 75 cycles.)

TUNING — Due to its unique design and circuitry, the "Invader" is extremely easy to tune and operate! Simply tune for maximum on the meter and you're ready to go! Just a few front panel controls give you complete flexibility. Unique single-knob wide range loading control of output impedance. Exclusive RF controlled audio AGC and limiter-type ALC deliver greater average speech power — automatically! Variable "zero" level control gives you optimum receiver injection. Integral fixed loading for linear amplifier. Internal relay provides antenna relay control, receiver control and bias transfer for external amplifier or other control function.

OUTPUT CIRCUIT — The final amplifier of the Viking "Invader" is designed around a highly efficient pi-network tank circuit which is designed to handle 30 to 600 ohm resistive antenna loads and is also capable of tuning out large amounts of reactance. The final amplifier utilizes a pair of 6146 tubes in parallel, bridge neutralized.

POWER SUPPLY — The "Invader's" compact, heavy duty power supply is located right within the "Invader" cabinet. Swinging choke circuitry gives the "Invader" excellent voltage regulation — power supply provides both high and low voltages for all sections of the transmitter as well as regulated bias and screen voltages for the unit.

EXCLUSIVE — Completely integrated design for overnight conversion to the "Invader-2000" . . . for a solid 2000 watts SSB P.E.P. input, 1000 watts CW, and 600 watts input on AM!

EXCLUSIVE — Both limiter ALC and audio AGC for **extra** sharp signal! Reduces over-driving and flat-topping — increases average audio level for greater penetration.

EXCLUSIVE — Single-knob wide range output circuit makes it possible to load into just about any conceivable type of antenna!

EXCLUSIVE — Full-time VFO heater element keeps VFO at operating temperature, even with the equipment turned off! No warm-up drift — rock-solid stability!

SPECIFICATIONS

FREQUENCY RANGE:
80, 40, 20, 15, and 10 meters
3.5 — 4.1; 7.0 — 7.6;
13.9 — 14.5; 20.9 — 21.5;
28.0 — 28.6; 28.5 — 29.1;
29.1 — 29.7 Mcs.

POWER REQUIREMENTS:
325 watts; 105-125 V AC,
50-60 cycles. Single Phase
320 watts maximum.

POWER OUTPUT:
Up to 125 watts P.E.P.

POWER INPUT:
200 Watts Single Sideband
200 Watts Continuous Wave
90 Watts Amplitude
Modulated Phone

SUPPRESSION:
Unwanted Sideband: 60 db or better
Carrier Suppression: 55 db or better
Spurious Frequencies: 55 db or better
Distortion Products: Better than 35 db down

VFO STABILITY:
Better than 75 cycles.

FUSE PROTECTION:
Transmitter fuses are located in the 115 V. power plug

TUBE AND DIODE COMPLEMENT

12AU7	Carrier Oscillator	6146	RF Power Amplifier (2)
6AH6	9 MC Amplifier	6T8	ALC and Audio AGC
6CX8	1st Mixer & Hetrodyne Oscillator	6AL5	VOX and AT Rectifier
6AU6	VFO	0A2	Voltage Regulator
12AT7	1st Audio & Relay Amplifier	1N294	Balanced Modulator Diodes (4)
12AT7	2nd Audio & VOX Amplifier	1N294	Output Indicator Diode
6U8	3rd Audio & AT Amplifier	1N294	Sideband Switching Diode
6AT6	2nd Mixer	5U4	Low Voltage Rectifier
12BY7	RF Driver	5R4	High Voltage Rectifier
		6X4	Bias Rectifier
		OA2	Bias Regulator

The Viking "Invader" is available only as a completely wired and tested unit. The sturdy steel cabinet is finished in an attractive two-tone warm grey with maroon nomenclature and control identification. Cabinet trim and dial escutcheon are satin-finished aluminum — knobs are an attractive maroon which harmonizes with grey cabinet finish. Dimensions: 11⅝" high x 21" wide x 17½" deep. Net Weight: 53 pounds. Shipping Weight: 67 pounds.

Cat. No. 240-302-2 Viking "Invader" wired and tested with tubes, crystals and crystal filter, less key and microphone . . . . . .

AMATEUR NET **$619.50**

NOTE: Factory modification can provide operation on up to 7 bands, 600 KC each, on most frequencies within 3-30 MC range for commercial or other use.

For information concerning Civil Defense Certification — See inside back cover.

Add hi-power conversion overnight for an integrated 2000 watt desk-top transmitter!

Now . . . take the features and performance of your Viking "Invader" . . . add the power and flexibility of the unique Viking "Hi-Power Conversion" system . . . and you're "on the air" with the "Invader-2000" — a solid 2000 watts SSB P.E.P. input, 1000 watts CW and 800 watts input on AM!

The Viking "Hi-Power Conversion" is completely wired and factory tested, and includes power supply, new front overlay panel, extra knobs, additional meter, necessary tubes — in fact, everything you need to convert your "Invader" into the power-packed "Invader-2000." Remote controlled power supply may be placed anywhere nearby for maximum operating convenience.

The amplifier portion of the "Hi-Power Conversion" uses two rugged, high efficiency, low replacement cost PL-175A pentode tubes, and features a ganged tank assembly that provides exceptionally uniform "Q". RF stages are cut off automatically on stand-by and key-up — wide range output circuit (40 to 600 ohms adjustable) will match virtually any antenna system. A complete dual cooling fan assembly, which is also included with your "Hi-Power Conversion" provides effective cooling of all tubes and components.

NOTE: Converted "Invader" meets all specifications of the "Invader-2000", described on the following pages.

Multi-section power supply incorporates dynamically regulated screen supply . . . unit is completely fused, and equipped with cabinet interlock system for added safety. Dimensions: 11¼" high x 19¾" wide x 14½" deep. Net Weight: 102 pounds. Shipping Weight: 116 pounds. Power requirements are 105-125 V AC 2-wire, or 210-250 V AC 3-wire 50/60 cycles, 1600 watts.

Cat No. 240-303-2 "Hi-power Conversion" wired and tested with tubes; ready for easy installation.

AMATEUR NET **$619.50**

2000 watts P. E. P. SSB *

1000 watts CW

800 watts AM phone

Viking "Invader-2000"

Here is the most versatile . . . and the most advanced SSB Transmitter/Exciter/Amplifier package ever designed for the amateur service! Excitingly different — from exclusive filter-type circuitry to distinctive front panel and cabinet design — the Viking "Invader-2000" offers flexibility and performance for a lifetime of operating pleasure.

Available completely factory wired and assembled, the "Invader-2000" offers all of the fine features of the "Invader" plus the added power and flexibility of an integral linear amplifier and remote controlled power supply. Here's desk-top operating convenience unsurpassed by any other high power transmitter . . . with a solid 2000 watts P.E.P. input on SSB, 1000 watts CW, and 800 watts AM input!

The "Invader-2000" was extensively field-tested by dozens of unbiased amateurs. Ease of operation was paramount in the design of the control system. Unique, single knob wide range loading control — slide rule dial with individually calibrated bands — highly simplified tuning . . . just tune for maximum meter reading (meter indicates actual RF power output).

POWER SUPPLY — Heavy duty, multi-section power supply uses 866A High Voltage Rectifiers. Screen supply employs a 5U4GA rectifier and uses heavy bleeder and high filter capacity for excellent dynamic screen voltage regulation in Class AB_2 operation. An OC2 bias regulator provides regulated bias for the two PL-175A final amplifier tubes.

THE FEATURES AND POWER YOU WANT . . . Full band-spread coverage of 80, 40, 20, 15 and 10 meters — no extra crystals to buy — no retuning necessary! Exclusive high frequency bandpass crystal filter gives you unwanted sideband suppression of 60 db or more! Highly stable, differentially compensated VFO with exclusive "Keep-Warm" heater element maintains VFO at operating temperature even with equipment turned off, thus eliminating warm-up drift!

Yes, in exciting distinctive styling . . . in advanced circuitry, operating ease, performance, coverage, and flexibility, the "Invader" and the "Invader-2000" are the transmitters that experienced amateurs have dreamed about . . . now a practical reality . . . and yours at a modest price!

FILTER-TYPE SIDEBAND — Highly stable operation and unusually sharp response on sideband is obtained by the use of a specially developed, multi-section high frequency band-pass crystal filter. This special crystal filter provides unwanted sideband suppression of 60 db and carrier suppression of 55 db or more. Select either upper or lower sideband instantly, with front panel "mode" switch.

FREQUENCY CONTROL — Instant band-switching coverage 80, 40, 20, 15 and 10 meters — no extra crystals or retuning required. Large, easy-to-read slide rule dial individually calibrated for each band . . . bands over-lap slightly to further simplify tuning. Highly stable, built-in VFO is differentially compensated and voltage regulated — factory adjusted for maximum stability . . . no warm-up drift! (Stability — better than 75 cycles.)

FINAL AMPLIFIER — The "Invader-2000" amplifier employs two rugged, high efficiency, low replacement cost Type PL-175A pentode tubes in parallel. Pi-network output matches 40 to 600 ohm resistive antenna loads, tunes out large amounts of reactance as well.

METERING — The meter switch is located on the front panel of the "Invader-2000" — permits instantaneous selection of any of the following: plate voltage; grid current; screen current; driver output. Plate current meter is always in circuit.

PUSH-PULL COOLING — Two fans located within the "Invader-2000" cabinet operate in a push-pull arrangement to draw cooling air through the chassis, cooling all component parts as well as filament and plate seals for extended tube life.

SPECIFICATIONS

FREQUENCY RANGE:
80, 40, 20, 15, and 10 meters
3.5 — 4.1; 7.0 — 7.6;
13.9 — 14.5; 20.9 — 21.5;
28.0 — 28.6; 28.5 — 29.1;
29.1 — 29.7 Mcs.

POWER REQUIREMENTS:
1600 watts; 105-125 V AC,
2-wire; or 210-250 V AC,
3-wire, 50-60 cycles.
1640 watts maximum.

POWER INPUT:
2000 Watts PEP Single Sideband
1000 Watts Continuous Wave
800 Watts Amplitude Modulated Phone

SUPPRESSION:
Unwanted Sideband: 60 db or better
Carrier Suppression: 55 db or better
Spurious Frequencies: 55 db or better
Distortion Products: Better than 30 db down

VFO STABILITY:
Better than 75 cycles

FUSE PROTECTION:
Transmitter fuses are located in the 115 V. power plug

TUBE AND DIODE COMPLEMENT

12AU7	Carrier Oscillator	1N294	Balanced Modulator Diodes (4)
6AH6	9 MC Amplifier	1N294	Output Indicator Diode
6CX8	1st Mixer & Hetrodyne Oscillator	1N294	Sideband Switching Diode
6AU6	VFO	5U4	Low Voltage Rectifier
12AT7	1st Audio & Relay Amplifier	5R4	High Voltage Rectifier
12AT7	2nd Audio & VOX Amplifier	6X4	Bias Rectifier
6U8	3rd Audio & AT Amplifier	OA2	Bias Regulator
6AH6	2nd Mixer	PL-175A	RF Power Amplifier (2)
12BY7	RF Driver	OC2	Bias Regulator
6146	RF Power Amplifier (2)	866A	High Voltage Rectifier (2)
6T8	ALC and Audio AGC	5U4	Screen Voltage Rectifier
6AL5	VOX and AT Rectifier		
OA2	Voltage Regulator		

Cat. No. 240-304-2 Viking "Invader-2000", wired and tested with remote power supply, tubes, crystals and crystal filter, less key and microphone.

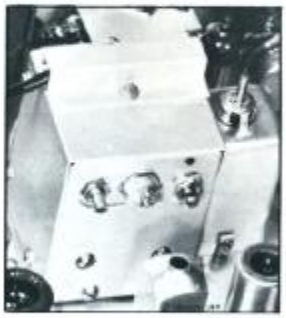
AMATEUR NET $1229.00

For information concerning Civil Defense Certification — See inside back cover.

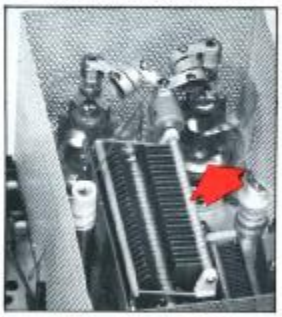
FILTER-TYPE SIDEBAND

The "Invader-2000" is furnished completely wired and factory tested. The sturdy steel cabinet is finished in attracitve two-tone warm grey with maroon nomenclature and control identification. Cabinet trim and dial escutcheon are satin-finish aluminum — knobs are an attractive maroon which harmonizes with the grey cabinet finish. Dimensions of the "Invader-2000": 11⅜" high x 21" wide x 17½" deep. Weight: 53 pounds. Dimensions of the "Power Supply": 11¼" high x 19⅜" wide x 14½" deep. Weight: 102 pounds. Total Shipping Weight of both units: 183 pounds.

*The F.C.C. permits a maximum one-kilowatt average power input for the amateur service. In SSB operation under normal conditions, this results in Peak Envelope Power Inputs of 2,000 watts or more depending on individual voice characteristics.

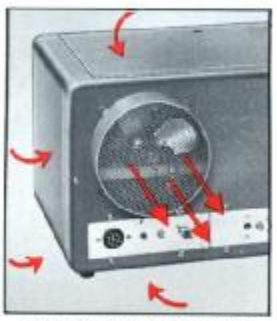


FREQUENCY CONTROL



FINAL AMPLIFIER

METERING



PUSH-PULL COOLING

2000 watts P.E.P.*

1000 watts CW

1000 watts AM

* with an auxiliary SSB exciter

Viking "Kilowatt"

Here's the finest power amplifier ever designed for the amateur service! A sparkling concept of modern transmitter design and engineering craftsmanship, the Viking "Kilowatt" is the only amplifier that gives your signal the authority of maximum legal power in all modes. Class C final amplifier operation provides plate circuit efficiencies in excess of 70% with unequalled broadcast-type high level amplitude modulation. Tuning is continuous from 3.5 to 30 mc. Safety and protective features include: a tamper-proof, key-operated main switch; cabinet interlock; arc gaps; and RF output terminal choke. The Viking "Kilowatt" is available as a self-contained pedestal or with the matching executive desk assembly. The compact pedestal contains the complete "Kilowatt," including RF power amplifier, modulator, power supplies, and all control equipment. The entire unit rolls out of the pedestal, providing complete accessibility to all electrical components for adjustment or maintenance.

EXCITATION REQUIREMENTS — 30 watts RF and 10 watts audio for AM; only 10 watts peak envelope power is necessary for SSB excitation. The Viking "Ranger" transmitter exciter is an ideal RF and audio driver for AM and CW, and the new Viking "Invader" will drive the Viking "Kilowatt" to full output on SSB.

OPERATING CONTROLS — The operating controls are located on top of the pedestal within easy reach. These controls include: grid tuning and bandswitch; main plate tuning with slide rule indicator dial; auxiliary plate tuning switch and coarse and fine coupling controls. Plate current is indicated on a permanently connected plate meter, and a combination grid current/modulator current meter furnishes readings as desired with the flip of a switch. Less frequently used controls including the tamper-proof, key operated main switch are located on the lower panel. Plate overload reset and transmission "mode" switch, as well as fuses, indicator lights and the permanently connected plate voltmeter are also located on the lower panel.

Interior view showing conservatively rated power equipment, heavy-duty modulator.

Completely shielded, plug-in power amplifier.

Complete accessibility — unit rolls out for easy adjustment or maintenance.

OUTPUT CIRCUIT — The power amplifier is constructed as a completely shielded plug-in unit with all external leads thoroughly filtered for TVI suppression. Easily removed from the main unit for service, the amplifier employs two 4-400A tubes in parallel, bridge neutralized. The pi-network output circuit is designed to match nominal 50 to 500 ohm antenna loads and will tune out large amounts of load reactance as well. Two fans, located within the amplifier compartment, cool filament and plate seals for extended tube life.

CLASS B PLATE MODULATOR — High level amplitude modulation is employed with push-pull 810 tubes operating in class B — over modulation effects are reduced by plate saturation limiting and audio response is better than 1 db from 200 to 3500 cps. Less than 10 watts audio driving power is needed for full modulator power output. A reactor in series with the screen supply provides the necessary audio modulating voltage for the screen.

TVI SUPPRESSION — In addition to complete shielding and the use of double "L" section filters in every external lead, the amplifier chassis is divided into compartments to isolate strong RF fields. The completely enclosed meter compartment also utilizes double "L" section TVI filters in each outgoing lead. Contact washers are used on all control shafts for effective grounding. Shielded leads in critical RF fields and low inductance by-passing at appropriate circuit points further suppress harmonic energy.

POWER SUPPLIES — The high voltage power supply uses 872A rectifiers and delivers 2500 volts at better than 700 ma. The screen supply employs a 5R4GY rectifier and uses four VR tubes for screen voltage regulation on AM and SSB. A heavily bled (150 ma.) bias supply results in excellent regulation — individual potentiometers are used for the initial setting of modulator bias voltages. A VR90 is used for bias regulation on SSB.

POWER REDUCER — A shielded power reducer for 100-150 watt transmitters is available and will provide up to 20 watts continuous dissipation when used with transmitters such as the Johnson Viking I and II, Collins 32V or others, permitting them to serve as exciters for the Viking "Kilowatt." See page 26.

*The F.C.C. permits a maximum one-kilowatt average power input for the amateur service. In SSB operation under normal conditions, this results in Peak Envelope Power inputs of 2,000 watts or more depending on individual voice characteristics.

SPECIFICATIONS

FREQUENCY RANGE:
Continuous coverage 3.5 to 30 megacycles

EXCITATION REQUIREMENTS:
30 Watts RF and 10 Watts Audio for AM; 10 Watts P.E.P. for SSB

PRIMARY AC VOLTAGE:
230 volts AC, 50-60 cycles, single phase
115 volts AC, 50-60 cycles, single phase.†
2500 watts maximum.

POWER INPUT:
High Power Position
1000 Watts Continuous Wave
1000 Watts Amplitude Modulated Phone
2000 Watts P.E.P.* Single Sideband
Low Power Position
300 Watts Continuous Wave (Tune)
300 Watts Amplitude Modulated Phone

† Recommended only when adequate heavy duty wiring from electric power source is available.

FUSING:
Filaments and Bias Supply primary fuse, located on front panel — 5 amp. cartridge type. Screen Supply primary fuse, located on front panel — 5 amp. cartridge type.

TUBE COMPLEMENT

4-400A—Final Amplifier (2)
810—Modulator, Class B (2)
872A—High Voltage Rectifier (2)
5R4GY—Screen Rectifier
5V4G—Bias Rectifier
VR-75 (1) — VR-150 (3) Screen Voltage Regulators
VR90—Bias Regulator

The Viking "Kilowatt" is not available as a kit, but is furnished wired, adjusted, and laboratory tested only. Finished in soft grey with maroon trim and green nomenclature. Outside dimensions of the complete assembly without accessory desk: 29½" high, 19¾" wide, and 32⅞" deep. With Accessory desk top, back, and three drawer pedestal: 29½" high, 63½" wide, and 32⅞" deep. Weight of complete "Kilowatt" Power Amplifier is approximately 400 pounds; accessory desk assembly, 155 pounds.

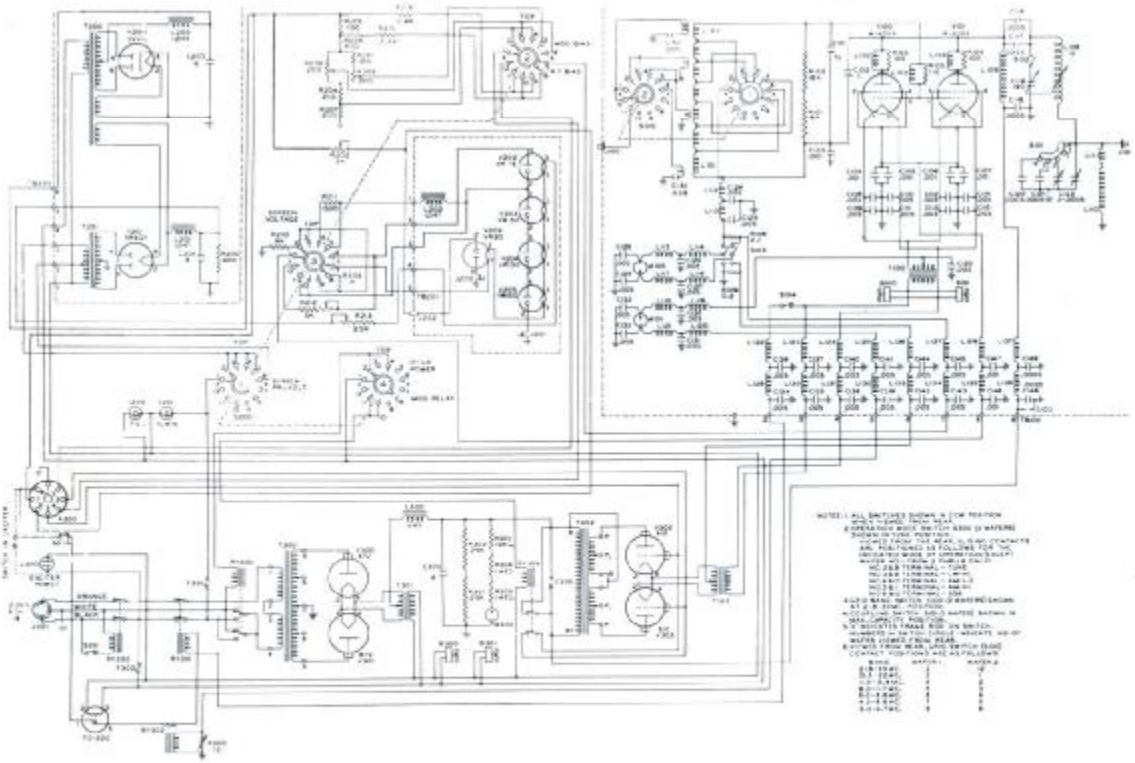
Cat. No. 240-1000 Viking "Kilowatt" Power Amplifier including tubes, furnished wired, adjusted, and laboratory tested . . . . . .

AMATEUR NET **$1595.00**

Cat. No. 251-101-1 Matching accessory desk top, back, three drawer unit for mounting to right of "Kilowatt" pedestal **$132.00 F.O.B. Corry, Pa.**

Cat. No. 251-101-2 Same as above, but mounts to left of "Kilowatt" pedestal.

For information concerning Civil Defense Certification —See inside back cover.



2000 watts P.E.P.*

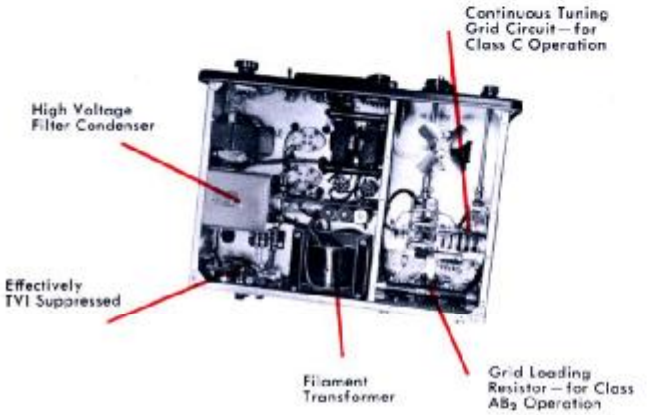
1000 watts CW

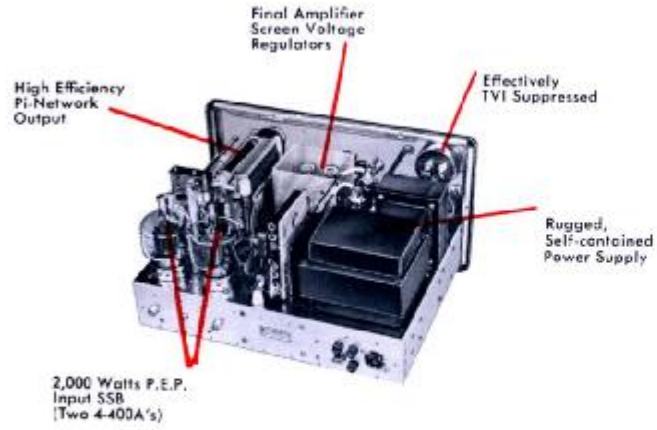
800 watts AM linear

* with an auxiliary SSB exciter

Viking "Thunderbolt"

Introducing the Viking "Thunderbolt" — the hottest linear amplifier on the market today! Here's solid communication power — 2,000 watts P.E.P.* input; 1,000 watts CW; 800 watts AM linear; in a completely self-contained desk-top package. The "Thunderbolt" may be driven by the Viking "Navigator," "Ranger," "Invader" or other unit of comparable output. Continuous coverage 3.5 to 30 megacycles (bandswitched) — wide range pi-network output circuit. The "Thunderbolt" has been engineered to provide maximum "talk-power" to smash through QRM — delivers a dominant signal on all amateur bands. Completely self-contained with internal blocking bias, voltage regulated screen and bias supplies, and plate power supply.





"THUNDERBOLT" POWER GAIN

Driver		Power increase-times
Adventurer	CW	20.0
Navigator	CW	25.0
Challenger	CW	8.3
Challenger	AM	11.3**
Ranger	CW	13.3
Ranger	AM	5.7
Viking I & II	CW	5.6
Viking I & II	AM	3.8
Invader	SSB	10.0
Invader	CW	5.0
Invader	AM	8.9

**Based on output power.

EXCITATION REQUIREMENTS — Drive requirements are approximately 10 watts in class AB_2 linear, 20 watts class C continuous wave. When used with the Viking "Invader" or similar exciter, the non-inductive input circuit of the "Thunderbolt" requires no grid tuning. Use of the Viking I, II or similar unit as an exciter for the Viking "Thunderbolt" requires use of the Johnson Attenuator, **Cat. No. 250-42-1.**

OPERATING CONTROLS — The operating controls for the "Thunderbolt" are conveniently located on the front panel within easy reach of the operator. These controls include: grid tuning and bandswitch; plate tuning with slide rule indicator dial; coarse and fine coupling controls; filament; plate; "mode"; and meter switches. Two meters provide a constant visual check of operation. Plate current meter also reads watts input and the second meter will read either grid current or plate voltage.

OUTPUT CIRCUIT — The Viking "Thunderbolt" amplifier employs two Type 4-400A tetrode tubes in parallel, bridge neutralized. The pi-network output is designed to match nominal 40 to 600 ohm antenna loads and will tune out large amounts of load reactance as well. Two fans, located within the amplifier cabinet, cool filament and plate seals for extended tube life.

TVI SUPPRESSION — In addition to complete shielding and the use of double "L" section filters in all outgoing leads, the "Thunderbolt" cabinet is electrically sealed with flexible monel braid — cup-type shields seal the meters, and interior harness leads and filaments are by-passed. Careful by-passing of the final, and special circuit techniques minimize harmonics in the output circuit.

POWER SUPPLIES — The high voltage power supply uses 866-A rectifiers and delivers adequate voltage and current for the rated input power. The screen supply employs a 5U4GA rectifier and uses four VR tubes for screen voltage regulation in Class AB_2 operation. A 6BY5 rectifier and VR 90 regulator comprise the bias supply for the two 4-400A final amplifier tubes.

SPECIFICATIONS

FREQUENCY RANGE:

Continuous coverage 3.5 through 30 megacycles (Bandswitched).

POWER INPUT:

1,000 Watts CW	Class C
800 Watts AM Linear	Class AB_2
2,000 Watts P.E.P.* Linear	Class AB_2

POWER REQUIREMENTS:

115 volts AC two wire or 230 volts AC three wire, 50-60 cycle single phase. 1750 watts maximum. Fuses accessible on rear of chassis.

TUBE COMPLEMENT

4-400A tetrode—Final Amplifier (2)
866A—High Voltage Rectifier (2)
6BY5GA—Bias Rectifier
5U4GA—Screen Voltage Rectifier
VR 90—Bias Regulator
VR-105 (2) } Screen Voltage
VR-150 (2) } Regulators

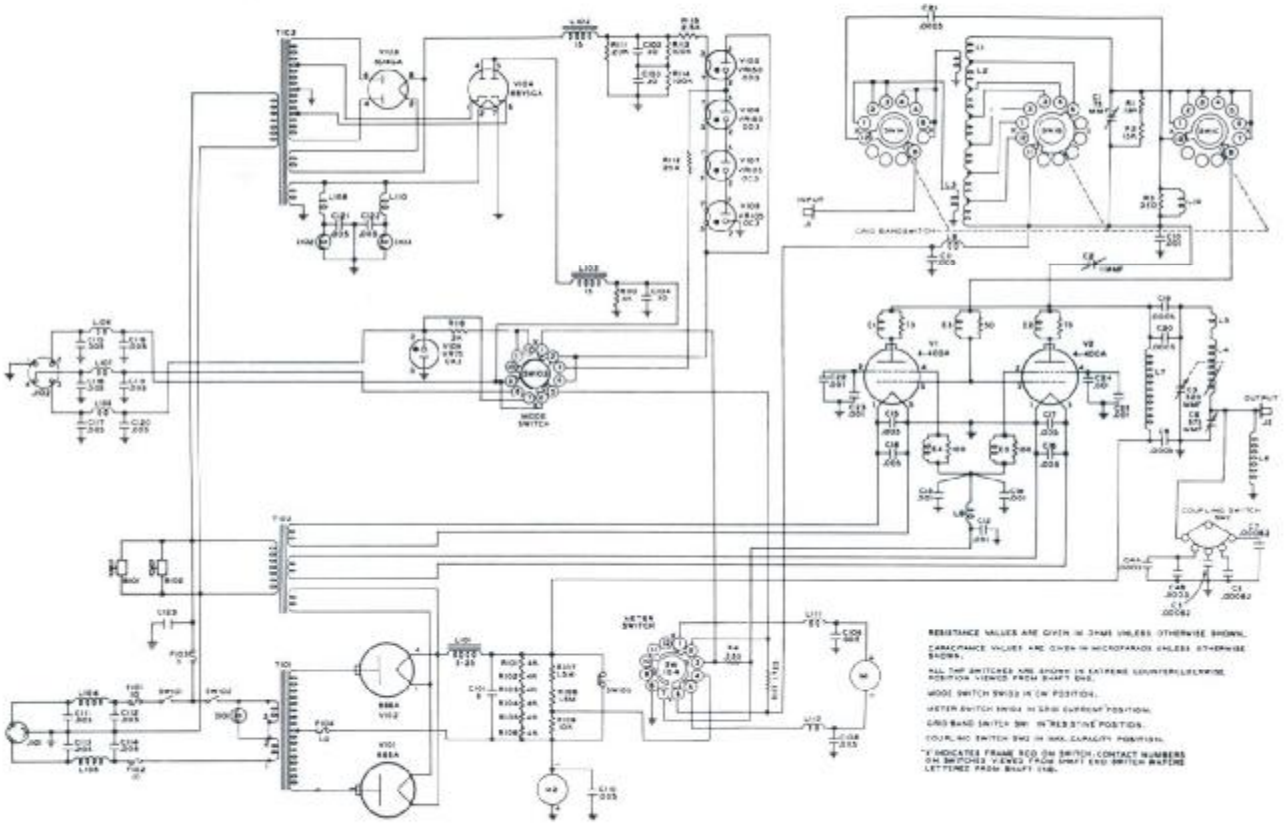
The Viking "Thunderbolt" is available completely wired and tested or as an easy to assemble kit. The 18 gauge steel cabinet is finished in attractive maroon and grey, with green nomenclature. Complete kit includes assembly instructions, photographs, diagrams and step-by-step wiring directions. Wiring harness, all necessary hardware furnished—no drilling or metal work necessary. Dimensions: 21" wide x 11⅝" high x 16¾" deep. Net Weight: 120 lbs. Shipping Weight: 140 lbs.

Cat. No. 240-353-1 Viking "Thunderbolt" Kit with tubes . . . . . .

AMATEUR NET **$524.50**

Cat. No. 240-353-2 Viking "Thunderbolt" wired and tested, with tubes . . . . **$589.50** Amateur Net

For information concerning Civil Defense Certification —See inside back cover.



1200 watts P. E. P.* SSB

1000 watts CW

700 watts AM linear

* with an auxiliary SSB exciter

Viking "6N2 Thunderbolt"

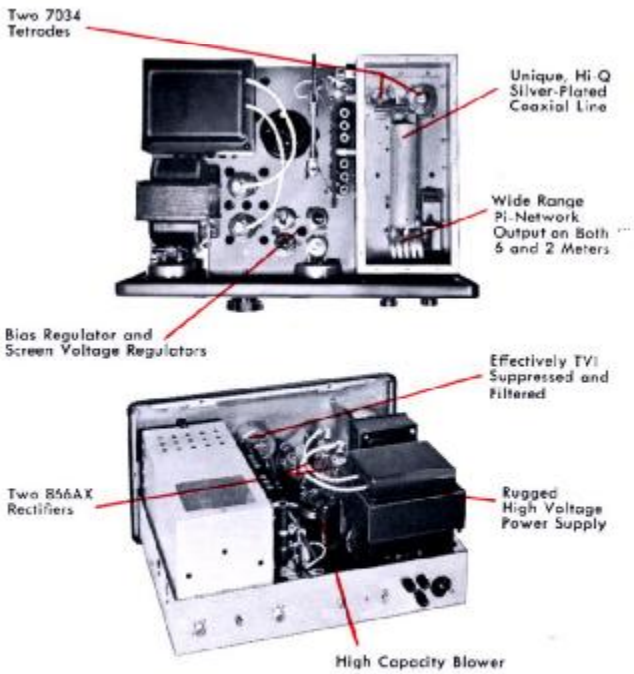
Now, a feature-packed power amplifier for VHF! Rated at 1200 watts P.E.P. input SSB and DSB, 1000 watts CW and 700 watts input AM, the Viking "6N2 Thunderbolt" offers continuous bandswitched coverage on 6 and 2 meters. A completely self-contained desk-top package, the "6N2 Thunderbolt" is effectively TVI suppressed and filtered — may be driven by the Viking "6N2" Transmitter, Communicators, or other units of comparable output. Due to its unique circuitry, the efficiency of the "6N2 Thunderbolt" is outstanding! Silver-plated Hi-Q coaxial line; silver-plated anode and other external portions of the 7034 tubes; silver-plated inductors; capacitors; and switch hold losses to approximately 5% on 2 meters, instead of common 25% losses experienced in some other 2 meter circuitry! Wide range pi-network output circuit on both 6 and 2 meters — completely self-contained with high voltage power supply, internal blocking bias, voltage regulator, screen and bias supplies.

AMPLIFIER CIRCUIT EFFICIENCY

Usual Circuit Losses on 2 Meters **25%**

"6N2 Thunderbolt" Losses on 2 Meters **5%***

*Unique Johnson Hi-Q coaxial line, silver-plated anode and other external metal portions of 7034 tubes, silver-plated inductors, capacitors, switch and enclosure provide outstanding efficiency.



EXCITATION REQUIREMENTS — Drive requirements are approximately 5 watts in Class AB_1 linear or 6 watts Class C continuous wave. When used with the Viking "6N2" transmitter/exciter or similar unit, the non-inductive input circuit requires no grid tuning.

OPERATING CONTROLS — The operating controls for the "6N2 Thunderbolt" are conveniently located on the front panel within easy reach of the operator. These controls include: grid tuning and bandswitch; grid input — 5 positions, see chart below; plate tuning; coupling and loading controls; filament; plate; "mode"; and meter switches. Two meters provide a constant visual check of operation. Plate current meter also reads watts input — the second meter reads grid current, screen current, RF output, DC plate voltage, and screen supply current.

EXPLANATION OF GRID INPUT SELECTOR

50 Ohm Input		R1	R2	R3
6 Meters	2 Meters			
connects input to six meter tuned grid circuit	connects input to two meter tuned grid circuit	connects input to 200 ohm resistive input circuit	connects input to 100 ohm resistive input circuit	connects input to 60 ohm resistive input circuit

OUTPUT CIRCUIT — The Viking "6N2" Thunderbolt" amplifier employs two bridge neutralized Type 7034 (4X250B, 4CX250B, 7203) coaxial type tetrodes. The pi-network output is designed to match transmission line impedances from 30 to 300 ohms and will tune out large amounts of load reactance as well. A high capacity blower system, located within the amplifier cabinet, cools filament and plate seals for extended tube life.

TVI SUPPRESSION — In addition to complete shielding and the use of double "L" section filters in all outgoing leads, the "6N2 Thunderbolt" cabinet is electrically sealed with flexible monel braid — cup-type shields seal the meters, and interior harness leads and filaments are by-passed. Careful by-passing of the final, and special circuit techniques minimize harmonics in the output circuit.

POWER SUPPLIES — The high voltage power supply uses 866-A rectifiers and delivers adequate voltage and current for the rated input power. The screen supply employs 2 VR-105 tubes and 1 VR-150 for screen voltage regulation in Class AB_1. A VR-75 bias regulator and a selenium bias rectifier comprise the bias supply for the two 7034 final amplifier tubes.

SPECIFICATIONS

FREQUENCY RANGE:
Continuous bandswitched coverage of 6 and 2 meters.

POWER INPUT:

1200 Watts P.E.P. *SSB and DSB	Class AB_1
1000 Watts CW	Class C
700 Watts AM Linear	Class AB_1

POWER REQUIREMENTS:
115 volts AC two wire or 230 volts AC three wire, 50-60 cycle single phase. 1500 watts maximum. Fuses accessible on rear of chassis.

TUBE COMPLEMENT

7034 tetrode—Final Amplifier (2)	VR-105—Screen Voltage Regulator (2)
866AX—High Voltage Rectifier (2)	VR-150—Screen Voltage Regulator
VR-75—Bias Regulator	Selenium Bias Rectifier

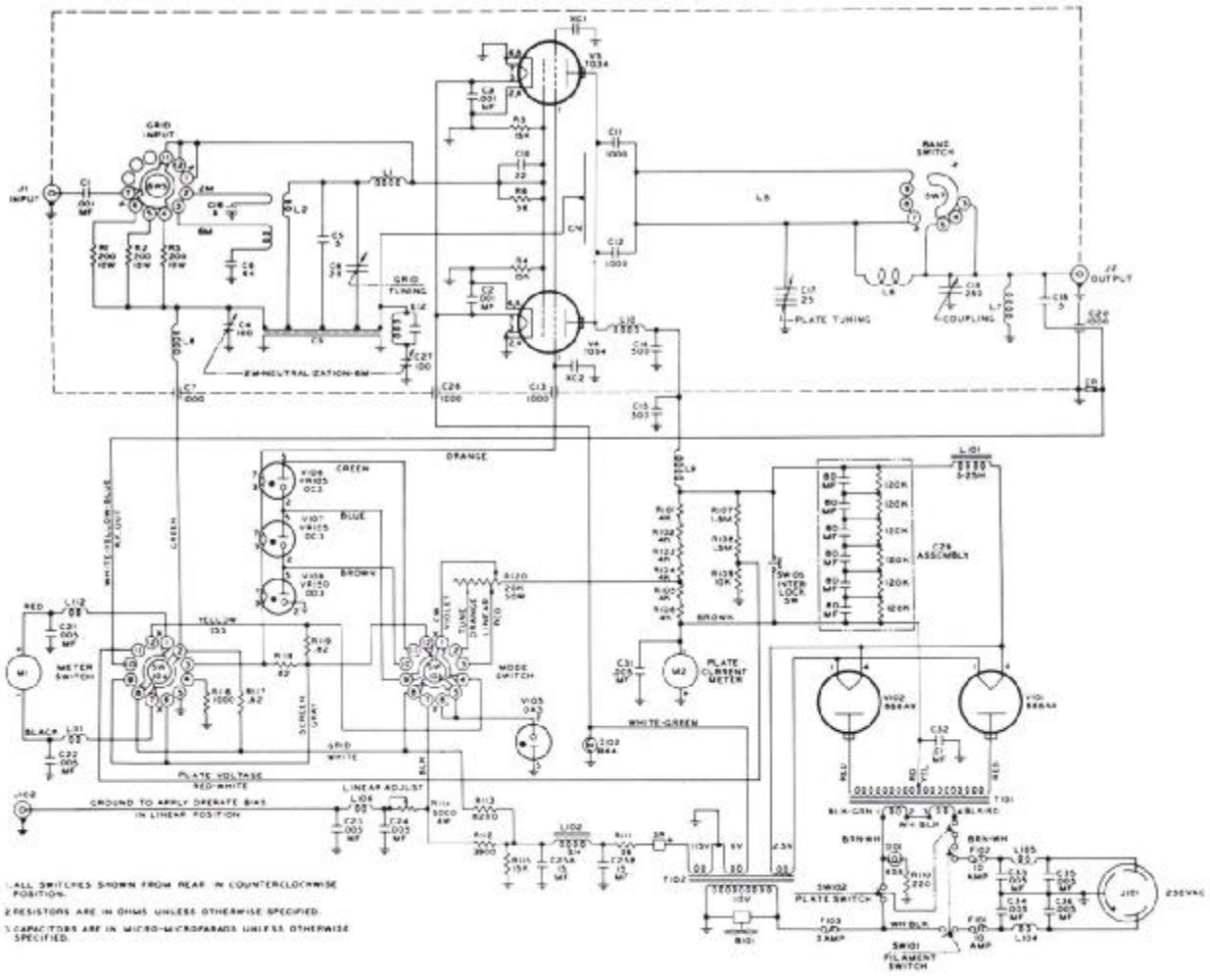
The Viking "6N2 Thunderbolt" is available wired and tested or as an easy to assemble kit. The 18 gauge steel cabinet is finished in attractive maroon and grey, with green nomenclature. Complete kit includes assembly instructions, photographs, diagrams and step-by-step wiring directions. Wiring harness and all necessary hardware furnished — no drilling or metal work necessary. Dimensions: 21" wide x 11⅝" high x 16⅞". Net Weight: 120 lbs. Shipping Weight: 140 lbs.

Cat. No. 240-362-1 Viking "6N2 Thunderbolt" Kit with tubes.

AMATEUR NET $524.50

Cat. No. 240-362-2 Viking "6N2 Thunderbolt" wired and tested, with tubes **$589.50 Amateur Net**

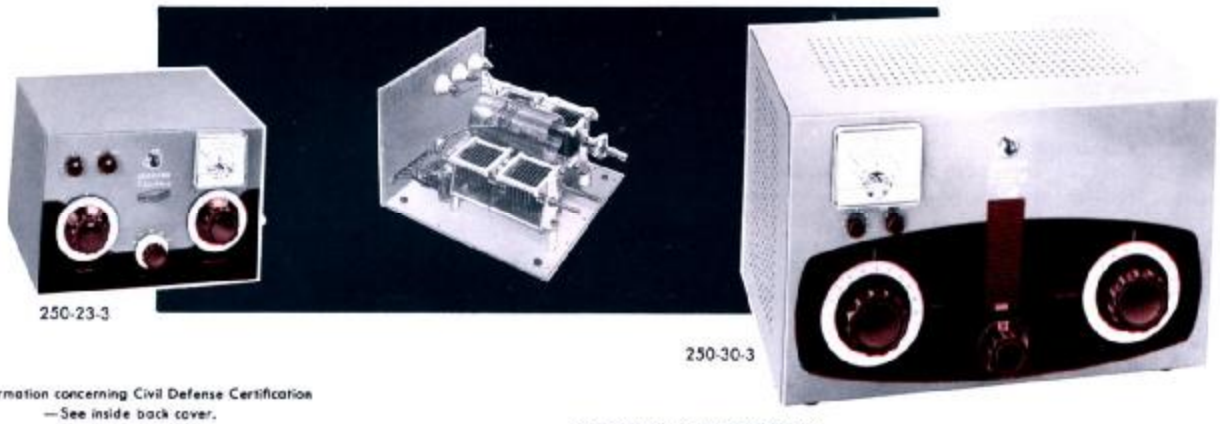
For information concerning Civil Defense Certification — See inside back cover.



Bandswitching

No plug-in coils

Viking "Matchboxes"



250-23-3

250-30-3

for information concerning Civil Defense Certification —See inside back cover.

The new Viking "Matchboxes" are completely integrated antenna matching and switching systems for CW and Amplitude Modulated transmitters up to 275 watts or one kilowatt with provision for continuous monitoring of either incident or reflected transmission line power. In SSB mode, the 275 watt unit will handle 750 watts and the kilowatt unit is rated up to 3 kilowatts P.E.P. input. A unique, balanced high "Q" tuned circuit and careful shielding provide more than 20 db of additional harmonic suppression.

Bandswitching on 80, 40, 20, 15 and 10 meters and completely front panel controlled, these versatile new "Matchboxes" are furnished with Directional Coupler and built-in Directional Coupler Indicator. Units will quickly match the transmitter to balanced or unbalanced lines over a wide range of antenna impedances. In addition, the "Matchboxes" are capable of tuning out large amounts of capacitive or inductive reactance. Revolutionary circuit design does away with the annoying use of "plug-in" coils and completely eliminates "load-tapping" necessary in other couplers.

RECEIVER INPUT IMPEDANCE MATCHING — The "Matchboxes" are also designed to provide separate matching of the antenna system to the receiver. A self-contained, heavy-duty change-over relay switches the antenna from receiver to transmitter, grounding the receiver antenna terminals in the "transmit" position, thus preventing damage to front-end components. In addition to antenna change-over, relay also mutes the receiver during transmission. An adjustable link, which requires only initial adjustment, provides an effective impedance match to the receiver, substantially improving receiver performance.

BUILT-IN DIRECTIONAL COUPLER INDICATOR — These new "Matchboxes" with Directional Coupler and self-contained Directional Coupler Indicator provide a continuous reading of Standing Wave Ratio and relative power in the transmission line. Coupler may be permanently installed in the 52-ohm coaxial line or used for other measurement purposes. Indicator consists of a 0-100 microammeter calibrated directly in SWR and relative power. Monitoring of either incident or reflected power may be quickly selected with a switch on the front of the cabinet. A second control on the front panel permits easy adjustment and calibration of the meter.

TUNING AND MATCHING — Antenna tuning and matching is accomplished with just two front panel controls. When changing bands, simply switch to the correct band position, and for proper RF energy transfer adjust the controls for minimum SWR as indicated by the meter. Tuning is sufficiently broad so that a single setting of the controls will cover a large segment of an amateur band.

All "Matchbox" connections are conveniently located at the rear of the unit. Cabinets are attractively finished in maroon and grey, and are effectively shielded to reduce harmonic radiation. The Directional Coupler Indicator and operational controls are located on the front panel, providing convenience and ready visibility. Plastic mounting feet protect the operating table. Units are supplied assembled, wired and pre-tested only — complete operating instructions included.

IMPORTANT NOTE: A suitable RF measuring device such as a SWR Bridge is essential for proper tuning and adjustment of any antenna coupler. The Johnson 250-37 Directional Coupler and the 250-38 Indicator, for power up to one kilowatt, are available as separate catalog items. They provide precision operation and reliability at a moderate price. (See Page 26 for details.)

275 WATT "MATCHBOX"

Designed to match a 52 ohm coaxial link line to reactive and non-reactive loads ranging from 25 to 1500 ohms for balanced lines, and 25 to 3000 ohms for unbalanced lines, this "Matchbox" will match virtually any transmission line terminal impedance, within the above values, throughout the 3.5 to 30 mc amateur band. The link line operates without standing waves, providing a convenient point for the installation of a Johnson 250-20 Low Pass RF Filter for improved harmonic suppression. Feed-through insulators are provided for connecting balanced or unbalanced feedlines. Dimensions: 9⅜" wide x 10½" deep x 7" high. Net Weight: 7¼ lb. Shipping Weight: 11 lbs. For transmitters with a maximum power input of 275 watts.

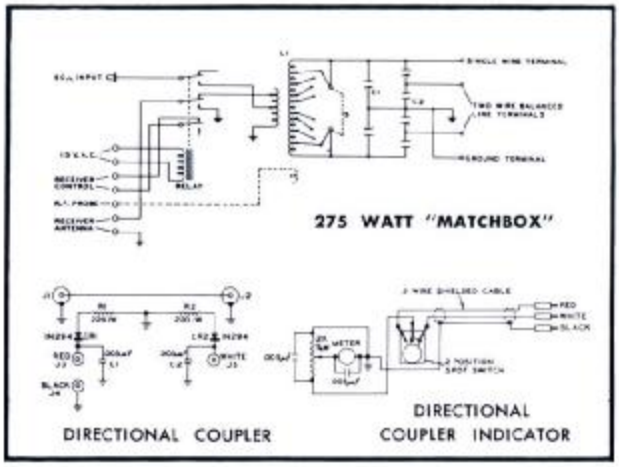
Cat. No. 250-23-3 With Directional Coupler and Indicator ..... **$86.50 Amateur Net**

Cat. No. 250-23 Less Directional Coupler and Indicator ..... **$54.95 Amateur Net**

KILOWATT "MATCHBOX"

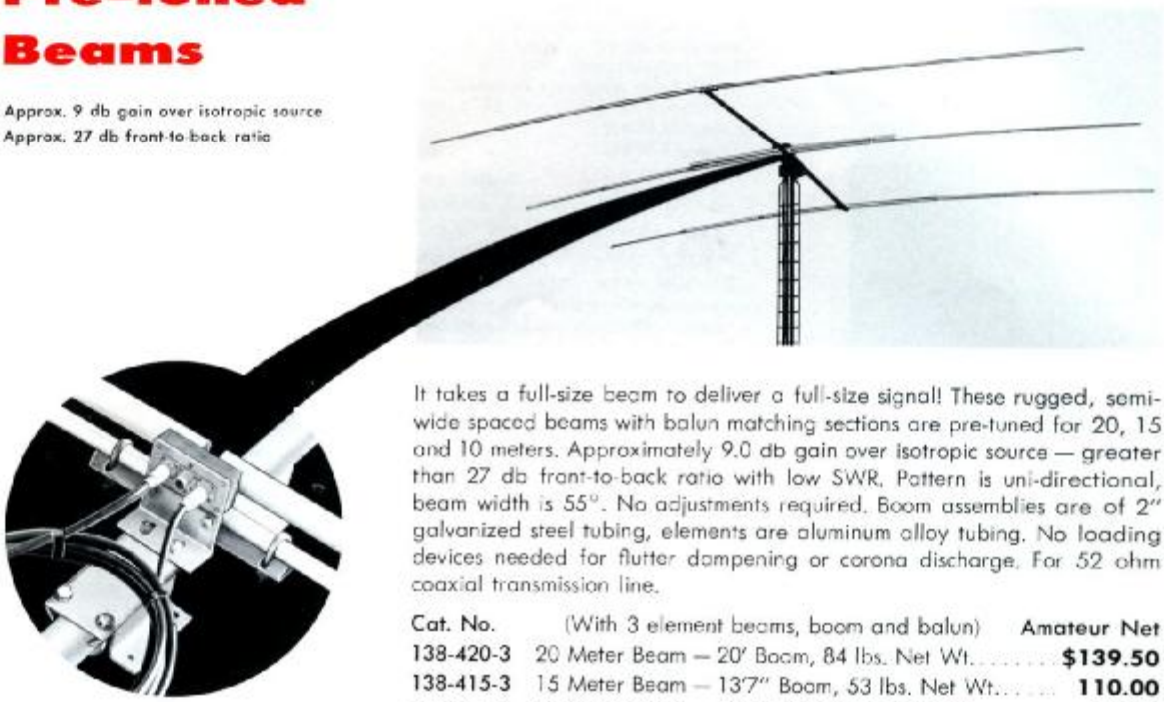
The Kilowatt "Matchbox" is designed to handle unbalanced line impedances from 50 to 2000 ohms, balanced line impedances from 50 to 1500 ohms. The antenna change-over system includes a time delay circuit for the relay, providing "fast make — slow break" action to prevent arcing or sticking of relay contacts. This feature also protects the transmitter and the receiver components from possible damage due to high voltage transients during antenna change-over switching. Feed-through insulators are provided for connecting balanced or unbalanced lines. A standard SO-239 connector is provided for 52 ohm coaxial lines. Dimensions: 17¼" wide x 12⅛" deep x 10⅜" high. Net Weight: 19 lbs. Shipping Weight: 27 lbs. For transmitters with a maximum power input of 1000 watts.

Cat. No. 250-30-3 With Directional Coupler and Indicator ..... **$149.50 Amateur Net**



Johnson Pre-tuned Beams

Approx. 9 db gain over isotropic source
Approx. 27 db front-to-back ratio



It takes a full-size beam to deliver a full-size signal! These rugged, semi-wide spaced beams with balun matching sections are pre-tuned for 20, 15 and 10 meters. Approximately 9.0 db gain over isotropic source — greater than 27 db front-to-back ratio with low SWR. Pattern is uni-directional, beam width is 55°. No adjustments required. Boom assemblies are of 2" galvanized steel tubing, elements are aluminum alloy tubing. No loading devices needed for flutter dampening or corona discharge. For 52 ohm coaxial transmission line.

Cat. No.	(With 3 element beams, boom and balun)	Amateur Net
138-420-3	20 Meter Beam — 20' Boom, 84 lbs. Net Wt.	**$139.50**
138-415-3	15 Meter Beam — 13'7" Boom, 53 lbs. Net Wt.	**110.00**
138-410-3	10 Meter Beam — 10' Boom, 42 lbs. Net Wt.	**79.50**

"Rotomatic" Rotator

This rugged all-weather rotator will safely support heavy multiple arrays weighing up to several hundred pounds even under icing conditions or high wind loading. A new high-torque series-type gear motor with more than three times the output torque of previous models insures operation in all environments to better than 20 degrees below zero. Easy-to-operate remote control box gives you positive control of the rotator. Simply set the pointer to the antenna position desired, and the automatic control system takes over, insuring accurate azimuth bearing at all times.

Rotator assembly is housed in a sturdy aluminum casting. Rotating table is 5/16" steel — tilt-type top plate is 1/4" steel. Oversized worm gears have a ratio of 12,000 to 1, providing a smooth 1 RPM rotation for the antenna. Top plate is hinged to tilt 90° for beam adjustment. Mounting area required: 11" x 14". Power Requirements: 115 volts AC, 50-60 cycles, single phase. Net Weight: 76 lbs. Shipping weight: 92 lbs.

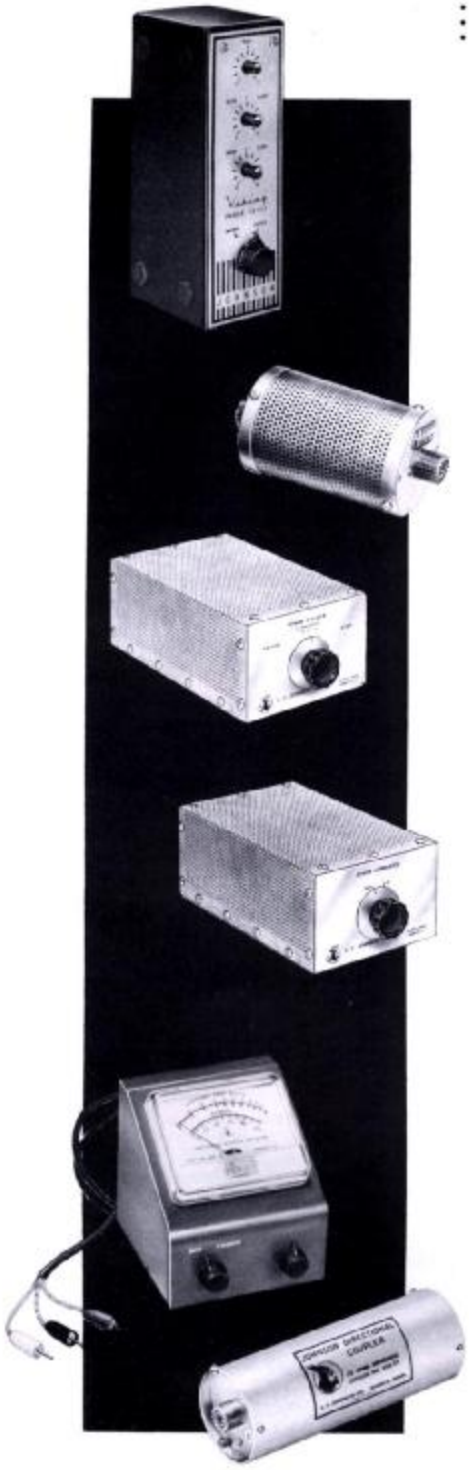
Cat. No. 138-117	"Rotomatic" Rotator with limit switches for 370° rotation — for coaxial line	**$335.00** Amateur Net
Cat. No. 138-108	Beam switching relay	**22.00** Amateur Net
Cat. No. 144-16	8 conductor cable for rotator	**.26**/ft. Amateur Net

for

every

amateur operator

Johnson Station Accessories



"PHONE PATCH" — Rugged, compact, completely automatic HYBRID-transformer type unit provides push-to-talk or manual operation in addition to (VOX) voice control operation for SSB, DSB or AM. Adjustable "line null" control gives excellent null on all telephone circuits with a high degree of isolation for automatic voice operation. Separate gain controls for transmitter and receiver inputs for setting proper adjustment and balance for critical circuits. In "patch" position receiver speaker is de-energized and audio is switched to telephone handset for undistorted, hum-free audio response. Effectively shielded — RF filtering and bypassing prevents RF feedback from telephone line. Rugged and compact; easy to install and operate. Dimensions: 2" wide x 6" high x 2½" deep.

Cat. No. 250-46 Viking "Phone Patch," wired and tested ..... **$25.00 Amateur Net**

POWER REDUCER — A shielded power reducer for 100-150 watt transmitters, the 250-29 provides up to 20 watts continuous dissipation when used with transmitters such as the Jonnson Viking I and II "Invader," Collins 32S1 or others, permitting them to serve as exciters for the Viking "Kilowatt." Completely shielded to prevent harmonic radiation, unit is equipped with SO-239 coaxial connectors at input and output, with high stability, low inductance power dissipating resistors. Dimensions: 3½" long x 2¼" diameter. Shipping Weight: 1 lb.

Cat. No. 250-29 ..... **$13.95 Amateur Net**

POWER DIVIDER — The Johnson Power Divider is completely shielded and will provide up to 35 watts continuous dissipation for proper output loading of 50 to 75 watt output transmitters when used to drive the Viking "Kilowatt." A 3-position switch located at one end of the unit permits the maximum medium, and zero steps of attenuation to be selected in the power divider. Two SO-239 coaxial connectors are located at the other end for the input and output coaxial lines. A perforated 3-sided cover provides ventilation for dissipating resistor heat. Dimensions: 4⅞" wide x 3⅛" high x 9¼" deep. Shipping Weight: 2 lbs., 5 oz.

Cat. No. 250-34 ..... **$25.50 Amateur Net**

ATTENUATORS — These T-pad attenuators provide 6 db of attenuation with the required power dissipation to enable various units to serve as exciters for the Viking "Thunderbolt" linear amplifier. Contained in a sturdy aluminum box — equipped with two SO-239 coaxial receptacles for input and output connections. Front panel dial permits instantaneous switching to cut attenuator in or out of the circuit. Dimensions: 4½" wide x 3⅛" high x 9⅛" deep.

Cat. No. 250-42-1 — For use with the Viking "Ranger" or similar unit. Maximum power dissipation: 45 watts — Maximum power input: 60 watts. Input and output impedance is 350 ohms. Provision for addition of 75 watt incandescent light bulb . . . unit is then suitable for use with the Viking II or other transmitter/exciter of similar power — Maximum power dissipation with addition of light bulb: 110-120 watts. Net Weight: 1 pound. Shipping Weight: 2 pounds ..... **$21.50 Amateur Net**

Cat. No. 250-42-3 — For use with HT-32 or similar unit. Maximum power dissipation: 45 watts — Maximum power input: 70 watts. Input and output impedance is 50 ohms. Net Weight: 1 pound. Shipping Weight: 2 pounds ..... **$21.50 Amateur Net**

DIRECTIONAL COUPLER AND INDICATOR — The new Johnson Directional Coupler and Indicator provides a continuous reading of SWR and relative power in the transmission line. Coupler may be permanently installed in 52 ohm coaxial line — will readily handle maximum legal power as specified by the FCC for amateur service. Standard tip jacks will permit the use of a commercial multimeter as an indicating instrument — reference sheets showing curves are supplied with each coupler for popular multimeter basic ranges. Indicator consists of a 0-100 micro-ammeter calibrated directly in SWR and relative power. Continuous monitoring of either incident or reflected power may be quickly selected with a switch on the front of the meter cabinet. A second control on the front panel, permits easy adjustment and calibration of the meter. Coupler equipped with SO-239 coaxial fittings. Dimensions: 6¼" long x 2⅝" diameter. Shipping Weight: 2 lbs.
Indicator equipped with 6-foot leads and male plugs. Dimensions: 4" wide x 4⅛" high x 4¼" deep. Shipping Weight: 4 lbs.

Cat. No. 250-37 Directional Coupler, wired and tested ..... **$11.75 Amateur Net**

Cat. No. 250-38 Indicator, wired and tested ..... **$25.00 Amateur Net**

"SIGNAL SENTRY" — A non-frequency sensitive, RF actuated monitor for either CW or phone, the "Signal Sentry" also acts as an "on the air" indicator and mutes the receiver for "break-in" operation. This unit is designed for use with any receiver and will operate on all frequencies to 50 mc without tuning. In addition, the "Signal Sentry" can be easily adapted for use as a code practice oscillator. Power is obtained from the receiver or other available supply — unit is easily installed. Tubes furnished: one 12AX7 and one 12AU7. Finished in attractive maroon and grey. Dimensions: 3⅜" wide x 3⅜" high x 3¾" deep. Shipping Weight: 3 lbs.

Cat. No. 250-25 "Signal Sentry" with tubes, wired, less power supply..... **$22.00 Amateur Net**

LOW PASS FILTER — The Johnson Low Pass Filter consists of four individually shielded sections and is capable of handling more than 1000 watts RF. Attenuation of harmonic and spurious frequencies above 54 megacycles is 75 db or more . . . insertion loss is less than .25 db. Filter case is designed for ready accessibility, and insulated fixed capacitors are replaceable. Standard SO-239 coaxial connectors are used for input and output terminals. Furnished completely wired and pre-tuned. Dimensions: 9" long x 2⅝" diameter. Shipping Weight: 3 lbs. Not for use on 6 meters.

Cat. No. 250-20 52 ohms impedance..... **$14.95 Amateur Net**

Cat. No. 250-35 72 ohms impedance..... **$14.95 Amateur Net**

CRYSTAL CALIBRATOR — This tiny calibrator provides accurate 100 kc check points to 55 mc for calibrating receivers and VFO's, or for monitoring the transmitter signal. Crystal furnished is high quality military type . . . circuit uses a 6BH6 tube and has an adjustable ceramic trimmer capacitor for exact zero beating of the crystal WWV or other standard. Unit requires only 6.3 volts at .15 amps. and 150 to 300 volts at 2 ma. Clips provided for tube prongs to facilitate connection to equipment furnishing power. Power cable and extension leads are included to permit remote mounting of switch. Furnished completely wired and tested with tube and crystal. Dimensions: 1⅝" x 2⅛" x 1⅝". (Overall height to top of tube is 3⅜".) Shipping Weight: 1 lb.

Cat. No. 250-28 Crystal Calibrator wired, with tube, crystal, less power supply **$17.95 Amateur Net**

T-R SWITCH — This new Johnson T-R Switch provides instantaneous high-efficiency electronic antenna switching. Exclusive double-gated circuitry, with 6BL7 dual triode, gives excellent receiver isolation. Gain: 2 db at 30 mcs.; 6 db at 3.5 mcs. Will handle high peak power capabilities of new linear amplifiers — rated at 4,000 watts peak power. Instantaneous break-in on SSB, DSB, CW or AM. Will not affect transmission line SWR — will provide an effective impedance match to most receivers through the 3 to 30 megacycle range. Nylon tip jack facilitates connection to an internal RF probe for driving an oscilloscope or other monitoring device. Equipped with SO-239 coaxial fittings. Dimensions: 4¼" wide x 4⅛" high x 5⅜" deep. Net Weight: 4 pounds. Shipping Weight: 5 pounds.

Cat. No. 250-39 T-R Switch wired and tested with tube and power supply..... **$27.75 Amateur Net**

"WHIPLOAD-6" — Designed for standard mobile whip mounting, the "Whipload-6" provides high efficiency base loading with instant bandswitch selection of 75, 40, 20, 15, and 10 meters. Air-wound, large diameter high "Q" coil . . . taps for each band require initial adjustment only. Tuning is continuous on 75 meters with accurate reset possible on any frequency . . . complete coverage on other bands without tuning. Enclosed in fibreglas housing with all hardware furnished. Dimensions: 5" high x 4" diameter. Net Weight: 2 lbs. Shipping Weight: 3 lbs.

Cat. No. 250-26 "Whipload-6", completely wired and tested..... **$16.95 Amateur Net**

"6N2" VFO

Here's good news for VHF operators — a stable, compact variable frequency oscillator for 6 and 2 meters! Designed to replace 8 to 9 mc. crystals in frequency multiplying 6 and 2 meter transmitters, including types using overtone oscillators. Unit is temperature compensated and exceptionally stable . . . series tuned oscillator is a 6BH6; voltage regulator tube is an OA2. Rigid, double-bearing ceramic insulated tuning capacitor, ceramic insulated air dielectric trimmers and ceramic coil form, plus extra heavy aluminum cabinet and chassis minimize frequency shift due to external shock or vibration. Output frequency range: 7.995 to 9.010 mc — edge-lighted Plexiglas dial calibrated from 144 to 148 mc, 50 to 51.5 mc, 51.5 to 53 mc, and 53 to 54 mc, for maximum bandspread. Power requirements: 6.3 VAC at .3 amps and 250 to 300 VDC at 10 ma — may be easily taken from the transmitter — power cable and plug furnished.

Available completely wired and tested or as an easy-to-assemble kit. Cabinet finished in attractive maroon and grey with green nomenclature. Complete kit includes assembly and operating instructions and all necessary hardware. Dimensions: 4" wide x 5" high x 4½" deep. Net Weight: 2 lbs. Shipping Weight: 3 lbs.

Cat. No. 240-133-1 "6N2" VFO Kit, with tubes and pre-calibrated dial.....

Cat. No. 240-133-2 "6N2" VFO Wired and Tested, with tubes and pre-calibrated dial.....

$54.95 Amateur Net

$34.95 Amateur Net

"6N2" Converter

This compact "6N2" Converter offers excellent image and I.F. rejection due to double-tuned, overcoupled, inter-stage circuits on both 6 and 2 meters — instant front panel bandswitching from normal receiver operation to either 6 or 2 meters. Good impedance match to 50 or 75 ohm output coaxial cable . . . excellent stability . . . maximum sensitivity and low noise figure. Cascode RF amplifier circuit utilizes new 6ES8 dual triode with "Frame Grid" Semi-remote cutoff characteristic produces minimum cross-modulation and overload. Fused, built-in transformer-type power supply provides protection from overload damage and accidental shock.

Available completely wired and tested or as an easy-to-assemble kit. Cabinet is finished in attractive maroon and grey with green nomenclature. Complete kit includes assembly and operating instructions and all necessary hardware. Dimensions: 2¾" wide x 5" high x 12" deep. Net Weight: 2 lbs. Shipping Weight: 5 lbs. Write for Sheet 711.

"6N2" Converter Kit with tubes.....

Cat. No. 250-43-1 .....Range: 26 to 30 mcs.
Cat. No. 250-43-2 .....Range: 28 to 30 mcs.
Cat. No. 250-43-3 .....Range: 14 to 18 mcs.
Cat. No. 250-43-4 ....Range: 30.5 to 34.5 mcs.

$59.95 Amateur Net

Cat. No. 250-43-12 ...Range: 26 to 30 mcs.
Cat. No. 250-43-22 ...Range: 28 to 30 mcs.
Cat. No. 250-43-32 ...Range: 14 to 18 mcs.
Cat. No. 250-43-42 .Range: 30.5 to 34.5 mcs.

"6N2" Converter, wired, with tubes... **$89.95** Amateur Net

Johnson Keys and Practice Sets

DELUXE SEMI-AUTOMATIC KEYS

Adjustable from lowest to highest speeds, this handsomely finished semi-automatic key has a smooth, easy action. Vibrator, posts, circuit closing switch, and all machine parts heavily chrome plated. Five adjustments with lock nuts — molded plastic paddles adjust separately to best height. Steel base 6¼"x3½"x½" — complete with adjustable weight and rubber feet.

Cat. No.		Net Price
114-500	⅛" contacts, black wrinkle base	$17.95
114-501	¼" contacts, polished chrome base	20.65

SPECIAL SEMI-AUTOMATIC KEY

Many operating features — attractively finished, black wrinkle enamel base. All hardware and vibrator heavily chrome plated. Same vibrator as on deluxe key. Easy action, adjustable from lowest to highest speeds. ⅛" coin silver contacts — circuit closing switch — rubber mounting feet.

114-520	Special Model, Semi-Automatic	$13.95

HEAVY DUTY KEYS

Heavy die cast base, chrome plated key arm. Well insulated for heavy duty service. Large ¼" coin silver contacts. Improved Navy-type knob. Adjustable steel bearings and spring design give light keying touch.

114-320	Black wrinkle enamel base	$4.70
114-321	Polished chrome plated base	5.85

STANDARD KEYS

Heavy die cast base. Smooth adjustable bearings. New Johnson "cushion-contact "design provides smooth keying action. Provision for plugging in semi-automatic keys. ⅛" coin silver contacts. A high quality key at a low cost.

114-310	Black wrinkle, no switch	$3.10
114-310-3	Black wrinkle with switch	3.90
114-311	Chrome plated, no switch	5.20
114-311-3	Chrome plated with switch	6.10

HIGH SPEED STANDARD KEYS

Fully adjustable spring tension, contact spacing and bearings. Brass base and binding posts — instrument lacquer finish. .072" platinor contacts.

114-100	R48 Key, satin brass, no switch	$5.95
114-100-3	M100 Key, satin brass with switch	6.85

PRACTICE KEY

An inexpensive practice key — perfect in design for the average beginner. All the metal parts are nickel plated. Furnished with an adjustable key arm, spring and smooth action bearings. Contacts are of ⅛" coin silver.

114-300	Molded phenolic base	$2.25

PHENOLIC BASE KEYS

High quality key with adjustable bearings. Improved spring-pigtail connection. ⅛" coin silver contacts — nickel plated metal parts.

114-301	Molded phenolic base, no switch	$2.50

CORD AND WEDGE

Cord and wedge for easy attachment of semi-automatic key across circuit-closing switch of a standard hand key. Used almost universally by railroad telegraphers — ideal for amateur service where both hand key and semi-automatic are used.

114-380	Cord and wedge	$1.15

PRACTICE SET

Constant frequency buzzer and key on a 4"x6" molded bakelite base. Buzzer tone is fully adjustable. Coin silver contacts. Uses two dry cells or "C" battery. Connect singly or in pairs for code practice.

Cat. No.		Net Price
114-450	Practice Set	$4.90

Buzzer only as used on set above.

114-400	Buzzer	$1.85

TELEGRAPH SOUNDER

Designed for instant response, brass sounder provides clear, resonant tone. Steel bar frame, black enamel finish. Brass bridge and adjustment screws, instrument lacquer finish. Sounder plate is black lacquered steel. Mahogany finished wood base, brass binding posts and rubber mounting feet.

114-112	Sounder (4 ohms)	$9.95
114-113	Sounder (20 ohms)	10.45

LEARNER SET

Telegraph practice set. Bar frame steel, brass bridge and adjustment screws. Brass lacquer finish. Brass sounding bar — black lacquered steel sounder plate. Adjustable, brass finished key arm. Mahogany finished wood base, brass binding posts, rubber feet.

114-110	(4 ohms)	$14.95
114-111	(20 ohms)	15.45

PONY RELAY

Polished, plated steel armature — all other metal parts brass with lacquer finish. Heavy duty magnets. Mahogany finished wood sub-base — cast iron black enamel base.

114-105	(20 ohms)	$13.80

for civil defense

CD CERTIFICATION

The Johnson amateur equipment on the preceding pages shown with the Civil Defense insignia will qualify for matching funds, having been certified by the E. F. Johnson Company as meeting OCDM specifications on factory wired and tested models for crystal controlled operation. Copies of the official description of necessary accessories and certification are available on request.

Viking II-CDC

180 watts CW
135 watts phone

General Coverage Transmitter — 1.7 to 30 Mcs.

Complete specification sheet available on request.

The Viking II-CDC is a general coverage communications transmitter, engineered to meet rigid specification and performance requirements for Civil Defense and industrial applications. Designed for crystal control or external VFO operation, the Viking II-CDC accommodates 10 crystals which may be switched from the front panel, while an eleventh position on the crystal switch selects the VFO input.

FINAL AMPLIFIER — The final amplifier uses two type 6146 tubes in parallel working into an efficient pi-network tank circuit which will handle 50 to 600 ohm resistive antenna loads and is capable of tuning out large amounts of reactance. Provides up to 30 db of second harmonic attenuation and reduces higher order harmonic energy by an even greater factor.

AUDIO SYSTEM — The Viking II-CDC is equipped with a high gain audio circuit for use with high impedance crystal or dynamic microphones, and features push-to-talk control. More than 6 db of fast-acting compression is provided by the modulation limiting system — and in addition, a high-level selenium diode limiter insures positive limiting of the occasional small peaks passed by the low-level control system.

TVI SUPPRESSION — Completely TVI suppressed, the Viking II-CDC cabinet is electrically sealed with flexible contact strip. Special shields are provided for the dial aperture and meter. Primary power line, antenna relay terminals, VFO receptacle, key jack, and microphone connector have "L" type filters.

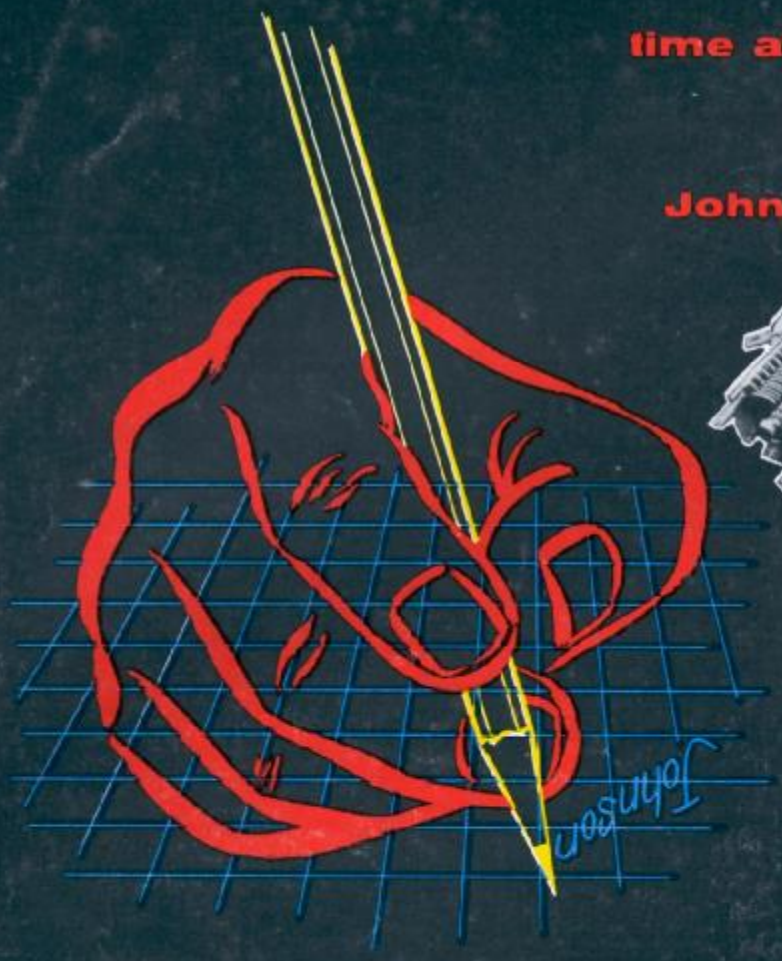
The Viking II-CDC transmitter is available as a completely wired and tested unit only. Furnished with tubes, less crystals, key and microphone. Dimensions: 20" wide x 10⅝" high x 13" deep. Net Weight: 65 lbs. Shipping Weight: 78 lbs.

Cat. No. 240-102-16

$430.00 Net

Certified to Office of Civil Defense and Mobilization — qualifies under matching funds program of the OCDM.

time after time
amateurs choose
Johnson components



The E. F. Johnson Company also manufactures a complete line of electronic components for those of you who prefer to design and build your own transmitting equipment and accessories.

A wide range of inductors is available for all bands from 160 to 6 meters. Continuously variable inductors in 3 sizes are made for a variety of applications.

Variable capacitors, from the diminutive "U" sizes to the rugged "C" capacitors offer the designer a complete line to choose from.

Tube sockets, nylon connectors, insulators and hardware are also available . . . all built to the standards which have made the E. F. Johnson Company a leader in component manufacture.

free catalog

For pricing and descriptive data on the complete Johnson line of electronic components, write for your free copy of our latest general products catalog!

E. F. JOHNSON COMPANY
WASECA, MINNESOTA

Catalog No. 961 Form No. 961K031 Printed in U.S.A.