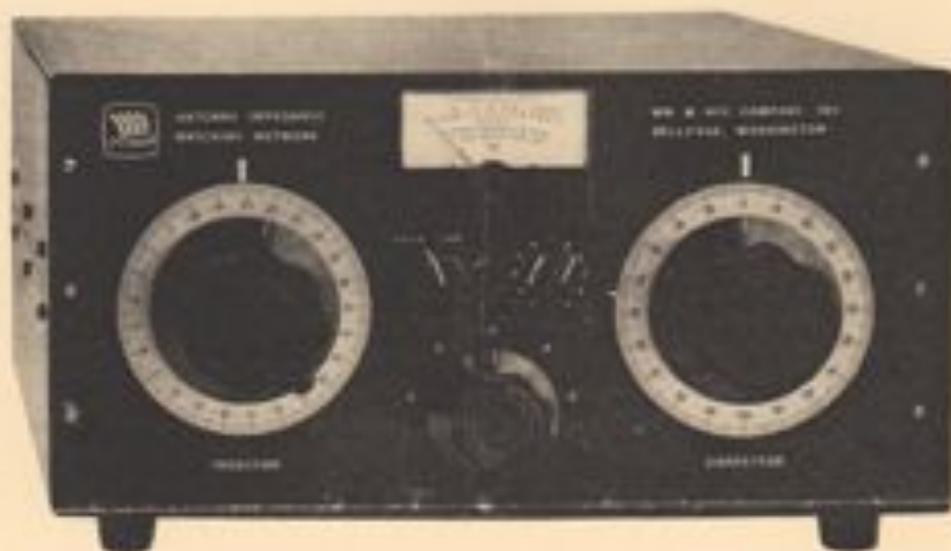




**NYE VIKING**  
Antenna Impedance-  
Matching Network  
Model MB II 3,000 watts



The NYE VIKING Model MB II provides:

- Constant SWR monitoring
- Precision tuning of final amp
- Harmonic suppression
- Receiver input impedance matching
- Maximum power transfer to antenna
- Continuous frequency coverage 1.6 to 30 MHz.
- Precision tuning of any wire  $\frac{1}{2}$  wavelength or longer with SWR of 1:1.

**Features:**

Copper ribbon-wound, silver plated variable inductor. Heavy duty 7000 volt variable output capacitor. 10,000 volt fixed capacitors. Silver plated RF conductors. .080 heavy gauge aluminum cabinet. Large precision, easy-to-read dial. 360° readout. Overload protection for SWR meter.

**Optional accessory:** (for twin lead installation) 3,000 watt 1:4 balun for use with twin lead, balanced and unbalanced lines. The balun mounts in the rear of the cabinet and provides efficient matching to twin lead antenna systems: 200 to 1000 ohm.

**SWR Meter**

Overload protected, toroid transformer coupling, half-meter type. Precision 100 micro ampere meter.

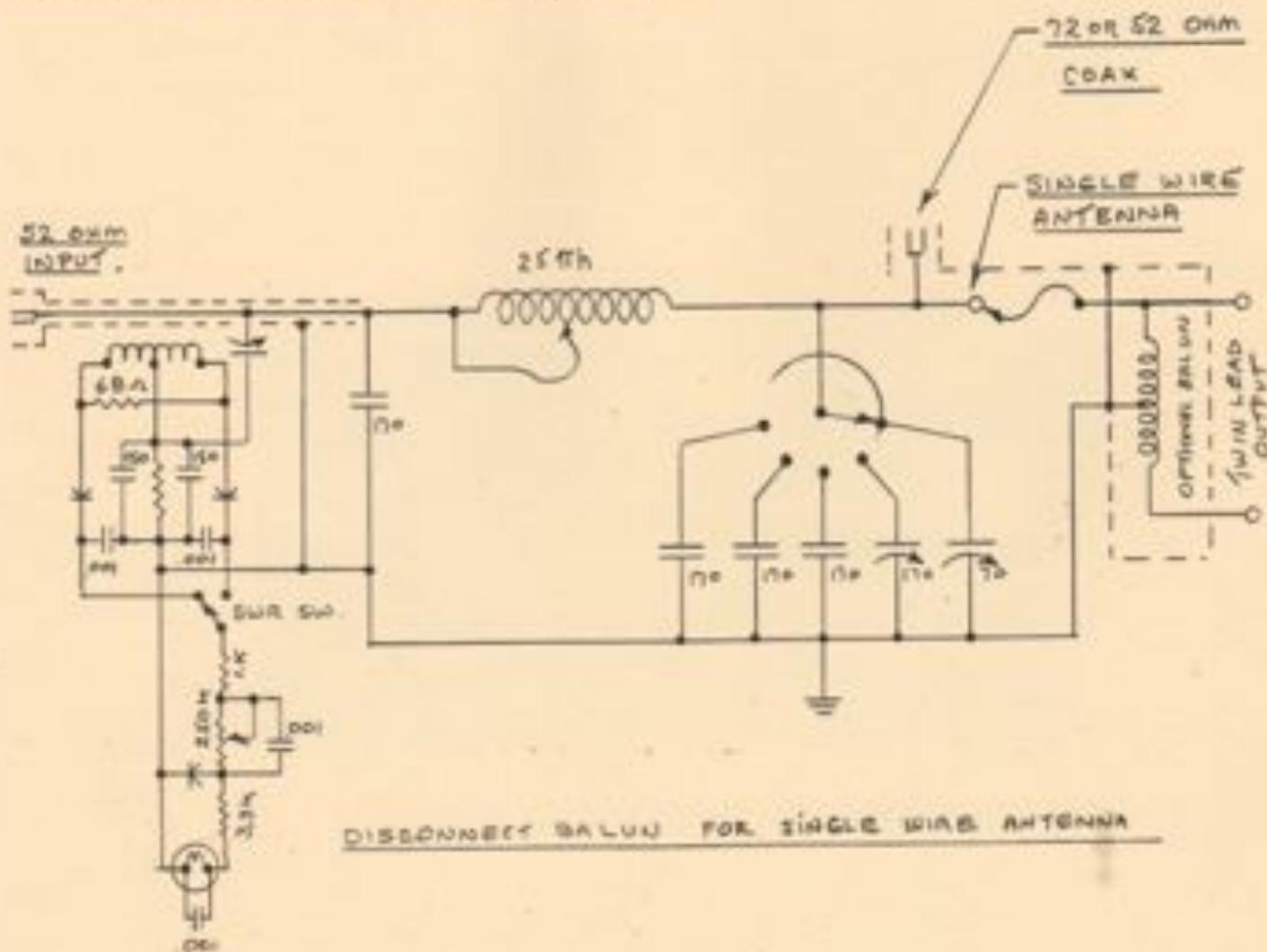
**Specifications**

Width—36 cm (14 inches) Height—20 cm (8 inches)  
Depth overall—34 cm (13½ inches) Weight—5.90 kilograms (13 lbs.)  
Shipping weight—8.20 kilograms (18 lbs.)



# NYE VIKING MB II "MATCHBOX"

## Antenna Impedance-matching Network



### THE MB II

The built-in DIRECTIONAL COUPLER and INDICATOR provide for continuous monitoring of forward or reflected transmission line power, either of which may be quickly selected. The 0-100 micro-ammeter indicator provides a visual means of adjusting the transmitter for maximum output and the antenna coupler for maximum RF energy transfer, thereby insuring maximum power at the antenna. Another control permits easy adjustment and calibration of the meter.

### TUNING AND MATCHING

Antenna tuning and matching is accomplished with just two front panel controls and 1 switch. 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.

### "MATCHBOX" CONNECTIONS

All "Matchbox" connections are conveniently located at the rear of the unit. The cabinet is attractively finished and is effectively shielded to reduce harmonic radiation. The Directional Coupler indicator and operational controls are located on the front panel, providing convenience and visibility. Plastic mounting feet protect the operating table. The units are supplied assembled, wired and pre-tested . . . complete operating instructions included.

### MODEL MB II BALUN

This is a 3000 watt 1:4 ratio balun intended to mount on the back panel of the MB II impedance matching network.

## NYE VIKING ANTENNA IMPEDANCE MATCHING NETWORK

### MODEL MB II

#### DESCRIPTION

The Nye Viking MB II antenna impedance matching network is a Pi network system consisting of a large variable, copper ribbon, inductor, a split section, high voltage variable capacitor and a bank of high voltage fixed capacitors to provide a wide range of input-output impedance ratios. The unit is capable of tuning any antenna  $1/8$  wavelength or longer. The built-in 100 microampere SWR meter will also give relative power output and is insensitive to frequency.

The MB II will handle power in excess of 3000 watts into loads between 40 and 2000 ohms impedance with an SWR reading below 1:1.1.

An accessory 3 kilowatt broad band balun provides balanced output to twin lead feeders 200 to 1000 ohm.

The unit features  $2\frac{1}{4}$ " tuning knobs with 4" dials.  $\frac{21}{20}$  to 1 readout over  $360^{\circ}$  on the variable inductor tuning plus  $360^{\circ}$  readout on the variable capacitor. Extra heavy gauge aluminum cabinet provides adequate shielding.

Input connector from the transmitter or linear is a standard P239 UHF fitting and the output terminal is a high voltage, porcelain feed through cone fitting in parallel with a female UHF co-ax fitting for 52 or 72 ohm co-ax cable.

Frequency range: 1.5 to 30 megaHertz (160 to 10 meters).

Size: 36 cm. wide, 20 cm. high, 34 cm. deep.

Weight:  $19\frac{1}{2}$  --  $7\frac{3}{4}$  --  $13\frac{3}{4}$  kilograms -- shipping weight: 8.20 kilograms (18 lbs.).

#### INSTALLATION

The Nye Viking Matchbox should be installed as close to the transmitter or linear amplifier as possible -- the shorter the co-ax line

the better: In case of TVI, a Nye Viking "Low Pass Filter" should be installed between the Matchbox and transmitter or final amplifier.

A good ground system is essential when tuning single wire antennas. It should be as short and heavy as possible -- preferably grounded to an all-metal water pipe or installed to a low resistance grounding rod. If adequate ground connection cannot be achieved, a system of ground radials (see ARRL Handbook) should be installed. Too long a ground will also result in the transmitter and Matchbox being "hot" at the higher frequencies, and contact with metal parts could cause an R.F. burn. Single wire antenna length is not critical but should exceed the minimum lengths shown on the chart for each wavelength. Too short an antenna will not tune to resonance, will not load properly, and will have a higher than 1:1 SWR.

Single wire and twin lead feeders are "hot" at the Matchbox end and should be well insulated where they pass through walls and partitions to the outside. Voltages of several thousand volts are easily possible at some frequencies.

Antennas fed with a 52 or 72 ohm co-ax cable should present a reasonable match at the antenna to cable terminal or there will be strong standing waves on the co-ax with attending losses and possible cable failure. Antenna systems of this type should be cut to frequency and matched to the cable either with a balun or matching stub. Short lengths of 10' or less to a matching network should present no problem.

Connect single wire antennas to the stand-off insulator in the rear. If a balun is installed, disconnect it when using single wire.

For twin lead installations, see special instructions that come with the 3 kilowatt Nye Viking Balun Accessory.

Twin lead feeders can be used if standing waves on the feeder can be tolerated by connecting one lead to the ground terminal and the other to the antenna output terminal. No loss of power results, but the radiation pattern will be changed.

### RECOMMENDED ANTENNA LENGTHS

160 meter	60 feet or longer (100 to 200 ideal)
80 meter	30 feet or longer (45 to 150 ideal)
40 meter	15 feet or longer (25 to 100 ideal)
20 meter	10 feet or longer (20 to 100 ideal)
10 and 15 meter	8 feet or longer (10 to 50 ideal)

Short antennas (less than  $3/4$  wave) will be directional broadside to the major length of the antenna. Long antennas (Over 2 wavelengths) will tend to be directional off the ends.

### CAUTION

The "hot" end of an antenna cut close to  $\frac{1}{2}$  wavelength, or multiple thereof, will have relatively high voltages at moderate power; i.e., 2000 watts P.E.F. at 2000 ohms impedance will have over 2800 volts peak at each end of a  $\frac{1}{2}$  wave antenna or multiple thereof. At 600 ohms, twin lead, there will be over 1500 volts. Adequate insulation should be provided at all feed-thru points at the antenna free end. Care should be exercised to avoid contact to prevent R.F. burn.

Installations with relatively long (with respect to wavelength) ground leads from the Matchbox to adequate ground may find the transmitter and Matchbox slightly "hot" when tuning low impedance input single wires, i.e., multiples of  $\frac{1}{2}$  wavelength long and close to these lengths.

The capacitor switch should never be turned while power is on. All tuning should be done at low power.

Do not apply power with the tuning coil knob removed -- the shaft is "hot".

## OPERATION

With all connections completed, antenna, transmitter, receiver, etc., tune the receiver to the desired frequency and tune in a signal. Tune the inductor coil and capacitor dials on the antenna tuner for maximum signal strength. If the capacitor tuning gives maximum signal at 0 or 100 on the dial, rotate the capacitor switch for maximum signal and retune the variable capacitor. (The switch adds or subtracts parallel capacitance to the variable capacitor if dial reads 0 and add if it reads 100. Low impedance antennas will require more capacity and high impedance antennas less. #1 position of capacitor switch is minimum capacity in the output circuit and #5 position is maximum capacity.)

Put the SWR switch in the "calibrate" position. If a linear is used, be sure it is off during the tune-up procedure. Set the transmitter for low power output or "tune-up" and adjust for resonance. Adjust the SWR meter for full scale reading.

Turn the "SWR" switch to the "SWR" position and retune the inductor and capacitor tuning knobs for "0" output on the meter. Again, if the capacitor reads 0 or 100 for minimum current rotate the capacitor switch for a lower reading.

## CAUTION

Be sure power is off while changing the capacitor switch. When the tuner has been adjusted for minimum SWR change the SWR switch back to "calibrate" and retune the transmitter for maximum reading. Adjust the meter for full scale reading when the transmitter has been "peaked". Now switch back to "SWR" and retune the Matchbox if necessary to reduce the SWR. (The meter is protected from excessive

current by a current limiting diode shunt.) The linear can now be turned on and adjusted for maximum output. Little or no change should be necessary to the antenna tuner.

Log the readings of frequency, indicator, switch and capacitor dial for future reference.

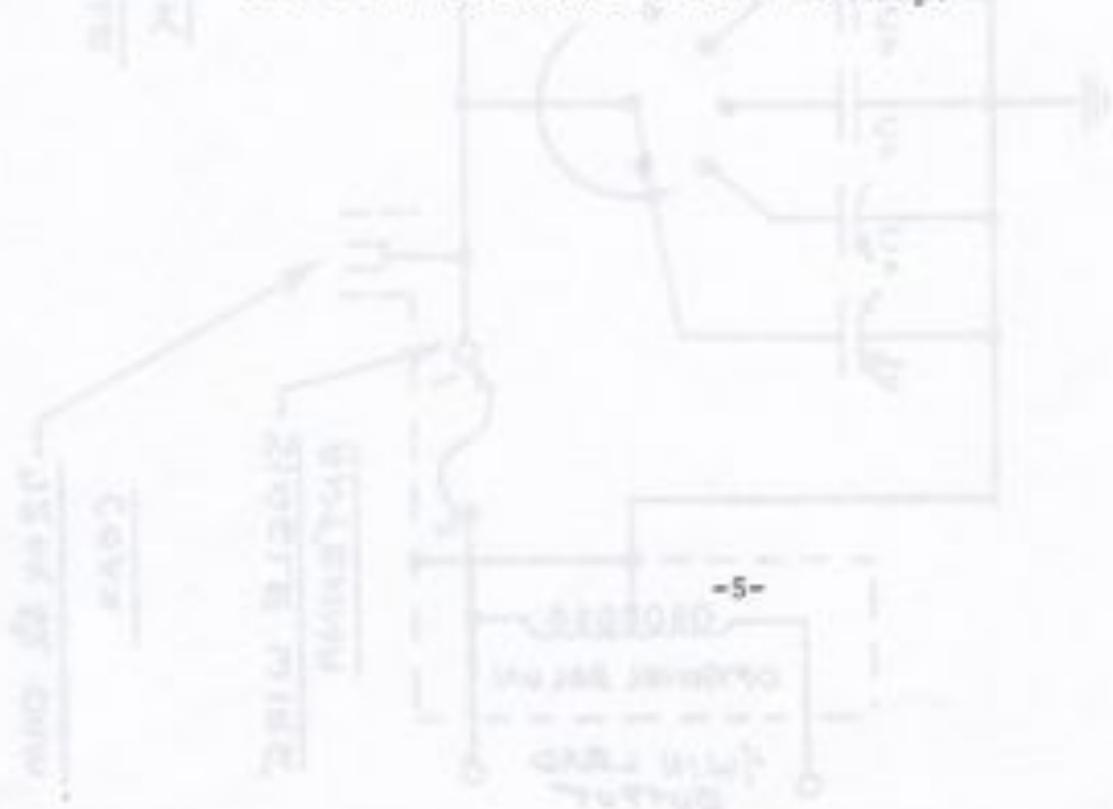
Slight differences in tuning settings will be noted during rainy periods as compared to dry and also when other objects are brought closer or farther away from the antenna.

Once dial settings for each band have been logged for a given antenna, it will be a simple matter to tune up on any frequency.

If you tune up and log the lower, middle and high end of each band, it should be very simple to tune up on any frequency. A separate log will have to be made for each antenna.

If your MB II has the balun accessory installed at the factory and you intend to use balanced line feeders, connect the strap between terminals 1 and 3 on the rear of the cabinet and connect the balanced line to terminals 1 and 2. Disconnect the strap for single wire antennas and connect the antenna to terminal #1.

For co-ax line, disconnect the strap.



FOR DIRECT CONTACT WITH THE MANUFACTURER

121021

NYE VIKING MB II ANTENNA IMPEDANCE MATCHING NETWORK

