



**OM Power**

## **Exhibit 8: Operation Description**

**External Radio Frequency  
Power Amplifier OM2500A**

**Model OM2500A**

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## Operational Description

The OM2500A is a complete and self-contained linear amplifier that covers the amateur band 1.8-29.7 MHz and provides 1500W output power with typically 60W exciter drive.

The amplifier's tuning is simplified by a **TUNE** Indicator which helps the operator to quickly and precisely match antennas and eliminates probability of inadvertent mistune. The antenna impedance matching capability is up to VSWR 3:1 or higher. A fixed matching circuit to the tubes input is employed which results in a very good load to the exciter over the entire frequency band from 1.8 to 29.7 MHz, yielding a good linearity.

Look at the schematic diagram (Exhibit 3). The high-performance ceramic tetrode type GU84B with a plate dissipation of 2500W is grid driven. **The input signal is 50 Ohm/250 W RF swamping resistor** (Rsw) in the INPUT PCB. This circuit tunes out the input capacitance of the tubes. The swamping resistor is not an attenuator but it is a termination load for the input matching circuit. It could not be eliminated since a severe impedance mismatch to the driver would prevent using the amplifier at all.

The **Surge arrester (located on Screen board PCB)** in the screen grid circuit protects the tubes screen grid and the voltage regulator in the events of dynatron effect or a tube internal flashover.

The nominal voltages and current of the tubes at rated output power are as follows:

DC plate voltage: 2800V for SSB and 2800V for RTTY;

DC plate current: **1.0A** for SSB and RTTY;

DC screen voltage: 360V

DC screen current: **20mA**

DC grid basis: 60V

The combinations of **L1/R2** in the plate circuits suppress possible VHF/UHF parasitic generation. The output resonant circuit comprises of the tubes output capacitance, **L1, C4, C7, C8, C9, C10, C11, C12, C13, L7 and L8**, all connected in a double Pi-L network. It transforms the antenna impedance to the tubes – optimum load impedance, and besides suppresses the harmonic frequency emissions. The tank is tuned over the bands and the impedance matching is controlled by the ceramic-supported air variable capacitors **C8, C9, CL2 and CL3**. The DC plate voltage is fed through the plate-choke **L2, L3** to the anodes, in a parallel circuit with the tank. The series capacitor **C4** prevent the DC voltage from reaching the resonant tank and/or amplifier's output, while the low-pass filter L3, C1, C6 prevents the RF currents from reaching the DC power source.

The output signal is fed through a piece of coaxial cable,, to the "RF OUTPUT" connector through the wattmeter PCB.

The amplifier is controlled by a microprocessor system, based on the Microchip Technology micro-controller , It uses a 20MHz clock, stabilized by a piezo-ceramic resonator.

All supply voltages are delivered from conventional rectifiers and linear regulators and no switching supplies are used. The currents of the tubes control grids, screen grids, and plates as well as the forward and reflected power and etc are continuously monitored by the uP controller. Many software-derived protections are based on this information in order to insure normal tubes regime and antenna tuning, thus drastically reducing the probability of any inadvertent operator's mistakes or apparatus irregularities that could arise during exploitation of the amplifier.