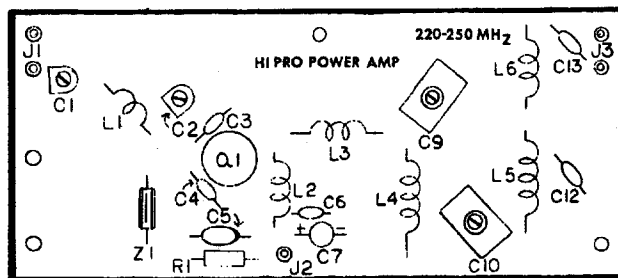


# ***MAGGIORE ELECTRONIC LABORATORY***

## **Hi Pro**

### **OPERATING AND MAINTENANCE MANUAL**



### **Hi Pro PAV 1 Power Amplifier 222MHz**

1. **DESCRIPTION.** The PAV and the PAV1 are RF power amplifiers which produce a minimum of 15 and 25 watts respectively with a nominal input of 3 to 5 watts. The power amplifiers cover the frequency range of 220 to 250 MHz and were designed primarily as a continuous duty, booster amplifier accessory for the Hi Pro EV-1 transmitter exciter. Any exciter with a 50 ohm output, capable of meeting the drive, duty cycle and emission requirements, however, may be used.

The amplifier operates from a nominal 13.8 VDC source. In most cases, a DC power supply is used with a battery back up system in times of AC power failure. Due to the efficiency of these power amplifiers it is practical to use a solar power system at remote sites.

The amplifier incorporates a single power transistor, in Class C. An input network, provides a 50 ohm matching load and a means of coupling the exciter output to the amplifier. The input circuit is tuned by means of capacitors C1 and C2. The output of the amplifier is fed to the antenna through a low pass filter consisting of L5, C12, L6 and C13.

2. **POWER AMPLIFIER ALIGNMENT.** Alignment requires the use of the following equipment:

1. A 50 ohm non inductive load and wattmeter. (Preferably with a 5 watt and 30 watt scale).
2. A 0 - 2 and 0 - 10 DC ampmeter connected in series with the supply line.

3. **PROCEDURE.** Be sure that the driver is operating properly before attempting to tune the power amplifier. Terminate the driver stage into the 50 ohm inductive load wattmeter. Adjust the drive to approximately 3 watts. This is accomplished easily with the EV-1 transmitter by adjusting the power level pot located on the transmitter board. Connect driver output to the power amplifier.

Adjust the power amplifier input capacitor C1 and C2 for an increase in power amplifier collector current.

Adjust C9 for maximum current. Output power on the wattmeter/load should be indicated at this time.

Adjust C10 for maximum output power indication.

Readjust C1 And C2 for maximum output.

Alternately readjust C9 and C10 for maximum output with minimum collector current reading.

4. **POWER AMPLIFIER INSTALLATION.** A heat sink of adequate size must be used with this amplifier. The stud on the power transistor must have heat sink compound applied to it and then this STUD must be attached to an adequate heat sink. Severe damage to the power transistor will result if operated without proper heat sinking.

On units where a Hi Pro heat sink is provided with the amplifier, additional heat sinking is required in conjunction with the provided heat sink. This additional heat sinking is provided normally when mounted in our enclosure. If our housing is not used, then sandwich the amplifier and the heat sink to a chassis or panel.

5. **SUGGESTIONS ON HEAT SINK SIZES.**

**INTERMITTENT SERVICE:** 20% DUTY CYCLE. 3"W x 5"L x 1" FINS.

**CONTINUOUS DUTY SERVICE:** 100% DUTY CYCLE. 6"W x 12"L x 1" FINS.

# Hi Pro PAV-1 POWER AMPLIFIER PARTS LIST.

|     |                       |     |  |     |                    |
|-----|-----------------------|-----|--|-----|--------------------|
| C01 | Cap. Var. 2-20 pF     | C02 | Cap. Var. 2-20 pF                        | C03 | Disc Cap. 68pF     |
| C04 | Disc Cap. 100 pF      | C05 | Disc Cap. 0.022 uF                       | C06 | Disc Cap. 0.001 uF |
| C07 | Elec. Cap. 10 uF 16 V | C09 | Cap. Var. 2-20 pF                        | C10 | Cap. Var. 2-20 pF  |
| C12 | Disc Cap. 18 pF       | C13 | Disc Cap. 18 pF                          | L01 | Coil Input         |
| L02 | Coil Choke            | L03 | Coil Output                              | L04 | Coil Output        |
| L05 | Coil Filter           | L06 | Coil Filter                              | R01 | Resistor 10 Ohms   |
| Z01 | Ferrite Choke         | Q1  | 15 Watts 2N6082 25 Watts MRF1946A/MRF240 |     |                    |

