INSTRUCTIONS FOR POWER AMPLIFIER MODEL 4EF4B1

The General Electric 250 watt Power Amplifier Model 4EF4B1 has been designed for use in stations operating in the 30-42 MC band. An external exciter is required for driving the amplifier. A power supply is provided for external mounting. The amplifier employs a 4CX250B tube as the final amplifier stage, with forced air cooling provided by a blower mounted on the power supply. Standard 19-inch relay rack mounting is employed for the power supply and amplifier. Tuning controls are located on the front panel of the amplifier.

This power amplifier is exciter keyed. Only when RF is present at the grid of the PA tube will the power amplifier be keyed on to the full 250 watts.

RF AND POWER CONNECTIONS

All power connections (except the high voltage) are made through a 6-conductor cable connected between the power supply and a plug (P481) on the front panel of the amplifier.

High voltage for the amplifier plate is supplied to a feed-through coupling (PO-2) at the rear of the plate compartment.

RF drive is connected between the exciter and a plug (P482) on the front of the unit by an RG58A/U coaxial cable.

PREVENTIVE MAINTENANCE

To obtain rated equipment performance, a program of regular preventive maintenance should be followed. Frequent checks of the operating frequency should be made as required by the FCC. Check the PA PLATE current, GRID current and PA PLATE voltage. Check for loose nuts, screws and damaged components. Inspect all power and RF cables and connectors for damage.

4CX250 POWER AMPLIFIER TUBE REPLACEMENT

A. To remove the power amplifier tube from its mounting, proceed as follows:

1. Remove the high voltage lead from PO-2 located on the rear of the plate compartment.

2. Loosen the winged screws holding the rear cover plate assembly.

3. Slide off the rear cover plate assembly.

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4. Insert the prongs of the tube extractor supplied with the equipment between the cooling fins of the tube.

5. Gently pull the tube straight out from the socket.

B. To insert the tube in its mounting, proceed as follows:

1. Insert the prongs of the tube extractor between the cooling fins of the tube.

2. Push the tube all the way into the socket.

3. Replace the rear cover plate assembly and tighten the winged screws.

4. Connect the high voltage lead to PO-2 on the rear of the PA.

CIRCUIT DESCRIPTION

Excitation is fed to the power amplifier through P482 to the coupling loop L482 and coupled to Coil L484 which, with C481, forms the grid tank circuit of the amplifier. By adjusting the PA GRID control (C481), the grid tank is tuned to the operating frequency. L481 isolates RF from the power cable.

Heater voltage for V481 may be varied inside the control box on the power supply chassis by adjusting the tap on R451. C482, C483 and C484 are RF by-pass capacitors. R481 is used as a screen decoupling resistor. Built into the tube socket is a ring type capacitor which serves as the screen by-pass.

C485 provides RF by-passing for the B-PLUS and L485 is the RF choke in the plate supply lead. The plate tank is composed of C488 and the transmission line section formed by L494 and L483. The plate tank is tuned by adjusting the PA PLATE control C488.

Adjusting the PA COUPLING control L487 varies the coupling between the plate tank and the output of the amplifier by controlling the amount of magnetic flux linking the plate line and the filter line. Energy is coupled from the filter to the output connector J481.

RF PROBE CIRCUIT

L496 feeds part of the RF energy in the output circuit to the input of the RF probe circuit. This energy is then rectified by CR481 and CR482 and a positive DC output is applied to an external RF Level Indicator.

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