



amateur service newsletter W6SAI

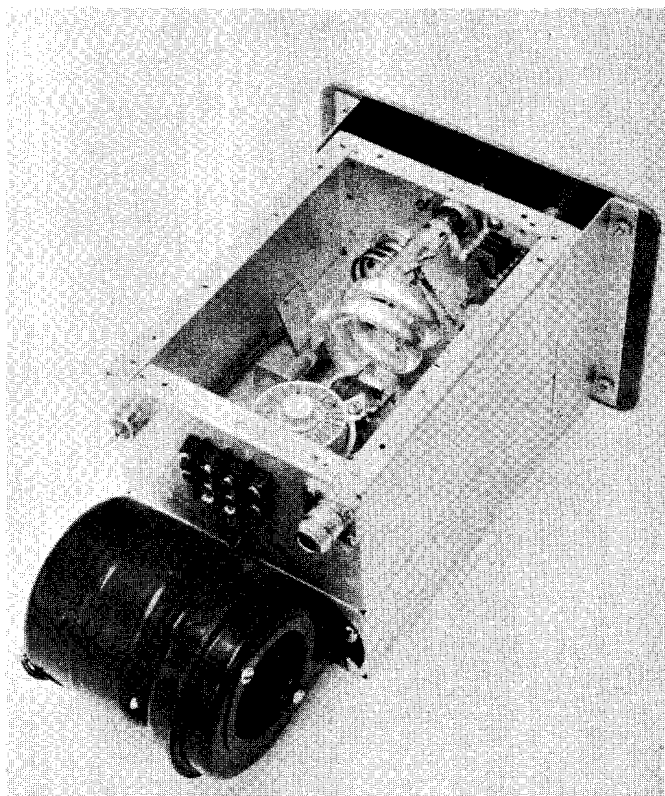
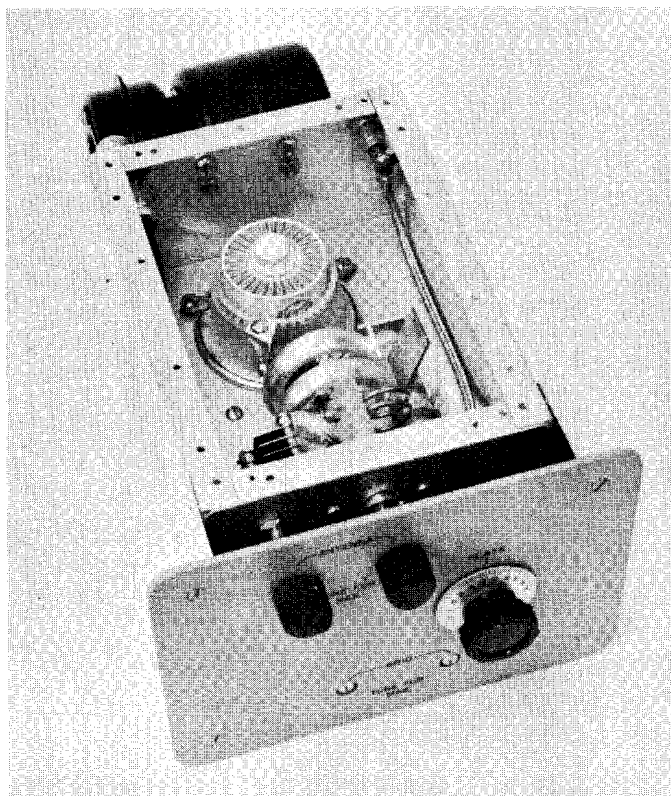
500 WATT AMPLIFIER FOR 144 MC USES EIMAC 4CX250B

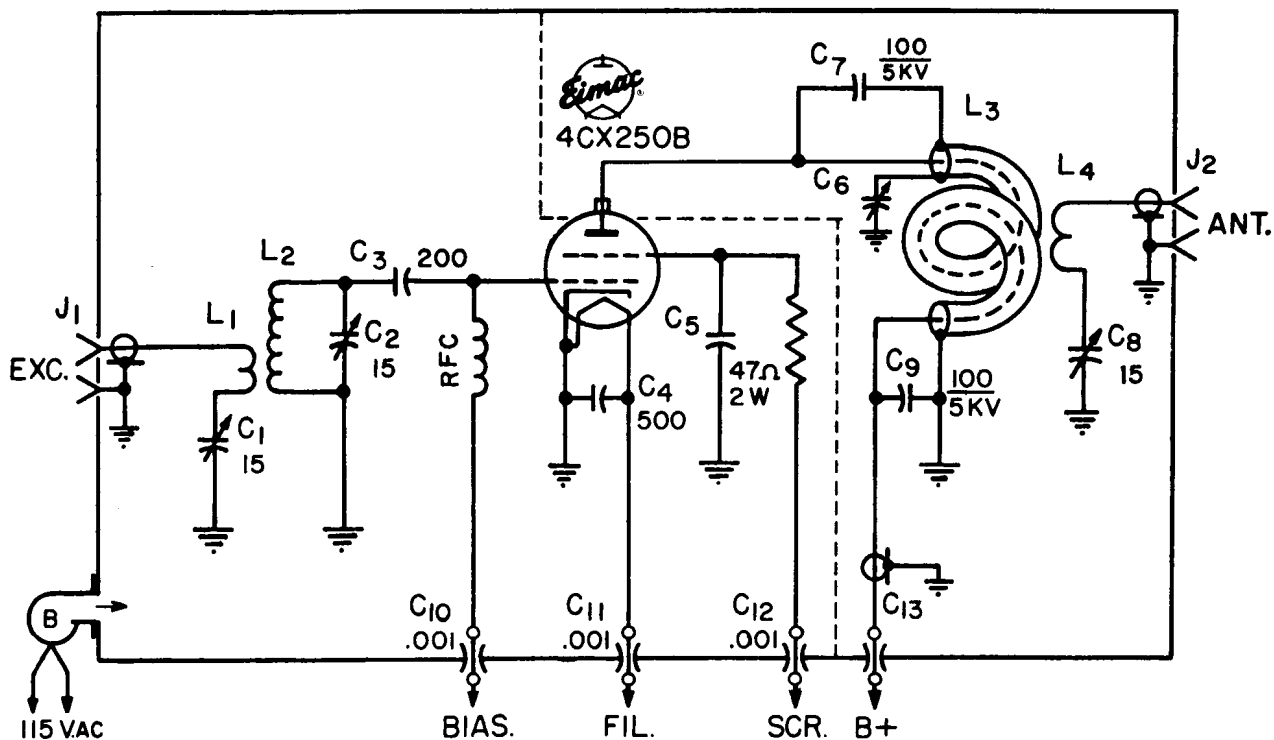
This compact amplifier runs 500 watts input in Class C or AB-1 linear service at 2 meters. Using a single 4CX250B, the amplifier measures 5" wide, 7" deep and 5" high, exclusive of blower. Conventional shunt-fed, parallel tuned tank circuits are used, with input and output links series tuned to reduce unwanted reactance in the coupling circuits.

The plate coil is a dual inductor, the outer conductor made of copper tubing and the inner conductor of RG-225/U teflon coaxial line, with the outer braid removed. The copper tubing coil is grounded and dc is applied to the 4CX250B via the inner conductor, eliminating the plate rf choke which adds undesirable capacitance to the circuit and is an erratic performer at 144 Mc.

The RG-225/U is passed through the tubing before it is wound into a coil. The ground end of the tubing is soldered to a small copper plate which is tapper for an 8-32 grounding bolt. The plate blocking capacitor C-7 is bolted to a similar plate soldered to the opposite end of the tubing coil.

Tuning capacitor C-6 is made of two copper plates, one of which is soldered to the tubing coil about 1/2-turn from coupling capacitor C-7. The plate is positioned vertically. The rotor (ground) plate is soldered to a copper ring which encircles a rexolite drive shaft. The ring is grounded by a copper wiper bolted to the chassis. The ends of the antenna coil L-4 pass through holes drilled in a second rexolite rod and serve as terminal points for flexible leads running to capacitor C-8 and the coaxial antenna lead to receptacle J-2. The drive shafts are attached to reduction drive units mounted on the panel.





Schematic, 4CX250B Amplifier for 144 MC.

C-1, C-2, C-8: 15 μf .

C-3: 200 μf silver mica.

C-4: 500 μf silver mica.

C-5: Part of EIMAC SK-600A socket.

C-6: Plate tuning capacitor. Two copper plates about $\frac{3}{4}$ " x 1". One soldered to copper tubing coil in vertical position. The other soldered to a copper ring machined for close fit on $\frac{1}{2}$ -inch diam. rexolite shaft. Ring is grounded to chassis by wiper arm bolted to chassis.

C-7, C-9: 100 μf , 5KV. Centralab 850S.

C-10, 11, 12: .001 μf , 500 volt feedthru.

C-13: .001 μf feedthru, 2.5 KV. Erie 1270-010.

L-1: 5 turns #16, $\frac{1}{4}$ " diam., $\frac{1}{2}$ " long.

L-2: 2 turns #16, $\frac{3}{16}$ " diam., adjust length to resonate with C-2 half-meshed.

L-3: 2 turns, $\frac{3}{8}$ " tubing, $1\frac{1}{4}$ " diam., $1\frac{1}{4}$ " long. See text.

L-4: 2 turns #14, $\frac{7}{8}$ " diam., $\frac{1}{4}$ " long.

B: Dayton 2C-782.

J-1: UG-291/BU.

J-2: UG-58A/U.

RFC: Ohmite Z-144

Plate collet: EIMAC 008294

Cabinet: two chassis. Bottom 5" x 7" x 2". Top, 5" x 7" x 3" (aluminum).

Amplifier operation is conventional. Initial tuneup should be done at a plate potential of 600 volts or so (screen voltage reduced to 200). When resonance and loading points have been established, plate voltage may be raised to 2000 (1500 volts for modulated service). Typical data for Class AB-1 linear service are:

Plate Voltage	2000
Screen Voltage	350
Grid Voltage	-55
Zero Signal Plate Current	100 mA
Max Signal Plate Current	250 mA

Plate Input Power	500	watts
Plate Output Power	300	watts
Max Screen Current	5	mA
(Adjust bias to obtain stated zero signal plate current).		