

## The MFJ-949C Versa Tuner II

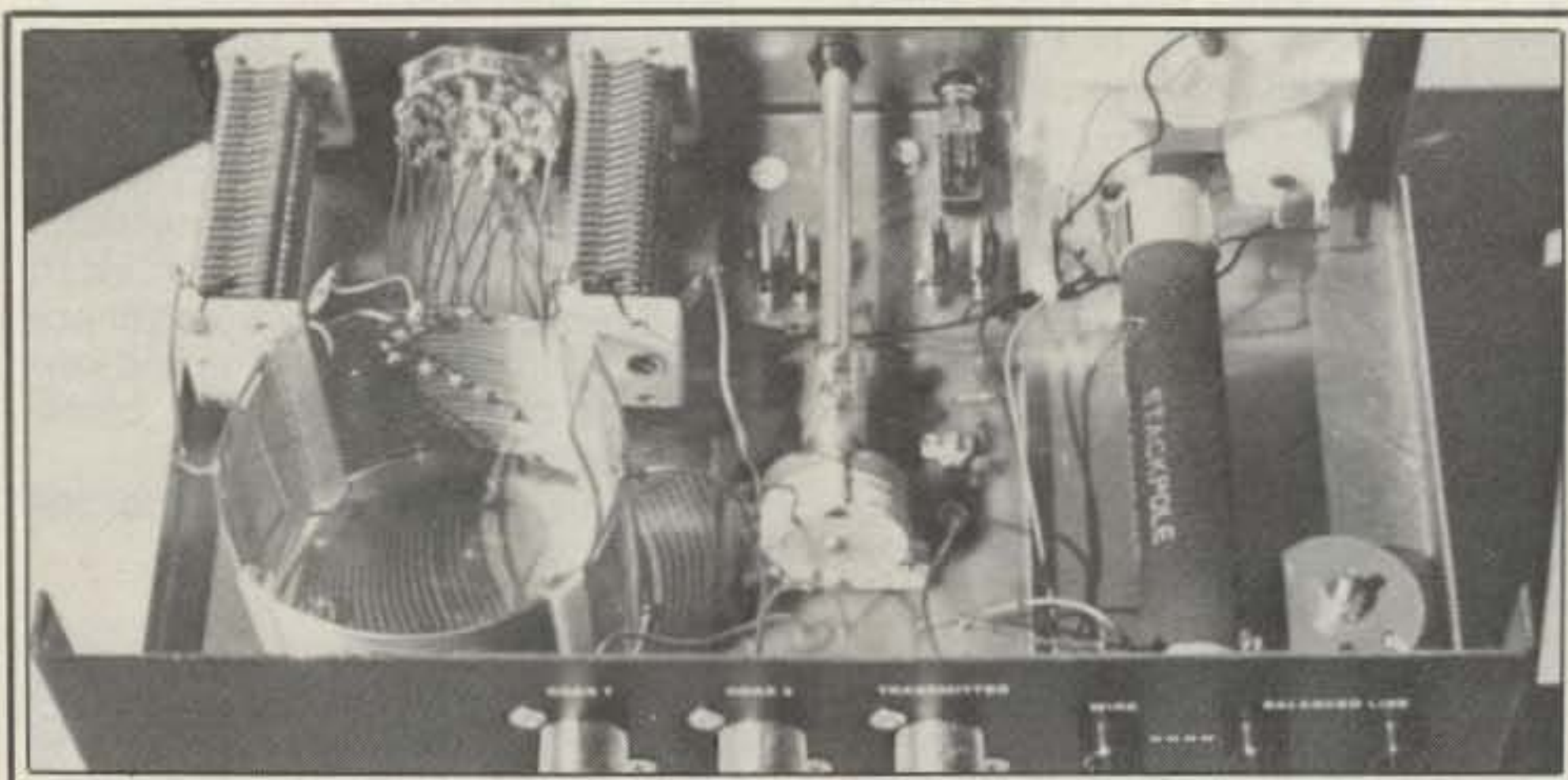
BY LEW MCCOY\*, W1ICP

**MFJ** Enterprises manufactures a rather extensive line of Transmatches, and I recently had the opportunity to test their model 949C, which is also designated the "Versa-Tuner II." I have probably designed, built, and wrote up more antenna tuners (Transmatches) than anyone around today, so I had a real interest in the MFJ unit.

The circuit of the antenna system matching portion, fig. 1, shows us that the 949 is what is now considered standard for those Transmatch circuits using a tapped inductor. Both input and output capacitors are 208 pF variables used with a tapped/switched inductor L1. However, the 949 is much more than just the matching portion of the circuit. Also included is a POWER/SWR bridge for tuning up. Additionally, there is a complete switching circuit whereby two different coaxial-fed systems can be switched or a bypass position is available for removing the Transmatch from the antenna system. Or, if desired, a single-wire or balanced-line feed can be used and matched. A bonus is a 300 watt, 50 ohm dummy load that can be switched in to provide a perfect tune-up or testing load for the transmitter.

The meter used for POWER/SWR is the dual needle type. One needle indicates reflected power and the other, forward power. I had used such an indicator some years ago and liked the system then, just as I do now with the Versa Tuner. Essentially two meters in one, the indications are easy to follow, and tune-up and adjustment of the 949 becomes routine. The meter is calibrated with three scales—forward power (up to 300 watts), reflected power (50 watts), and SWR. There are two power ranges, 30 watts or 300 watts, available by means of a panel switch.

As MFJ points out, the 949, using a tapped inductor, will match most antenna systems to a perfect match. There are some antenna loads that fall outside of the range of the system, but it is usually



At the upper left in this rear view are the two variable capacitors and the tapped inductor. At the right-hand side is the noninductive dummy load resistor.

easy to tailor such antennas to come into the "perfect" matching range. I use a double-extended, 80 meter Zepp for my wire antenna, with open-wire feeders. This antenna system, when used on all bands, will present some rather extreme matching situations on some bands. I found that with the 949 I could obtain 1.5 to 1 or better on all frequencies. One

thing about such a system—the load will always be "relatively" high impedance, so it isn't always the best test for a tuner. Physically short verticals for 160, 80, and 40 can present very low reactive impedance. Sometimes, assuming the vertical is very short, radiation resistance becomes a fraction of an ohm. Such loads can be the real test for a fixed (tapped) in-

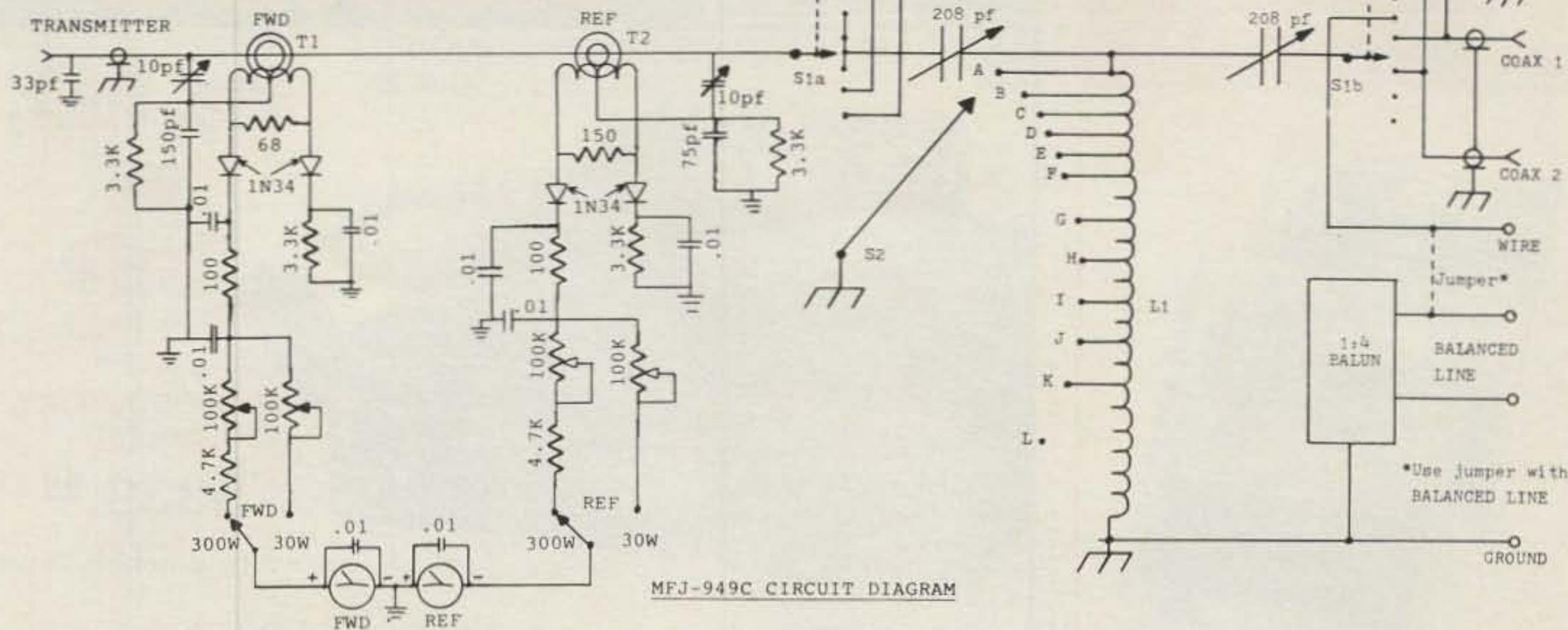


This photo shows the front-panel controls. The SWR/Power meter uses a dual needle type meter, at the left.

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Fig. 1— This is the circuit of the MFJ 949C. The left-hand portion of the circuit makes up the power bridge and SWR detectors. At the right-hand side is the actual tuning network.



ductor tuner. (Roller inductors make such matching relatively easy.) In most cases, the 949 handled these short antennas very well.

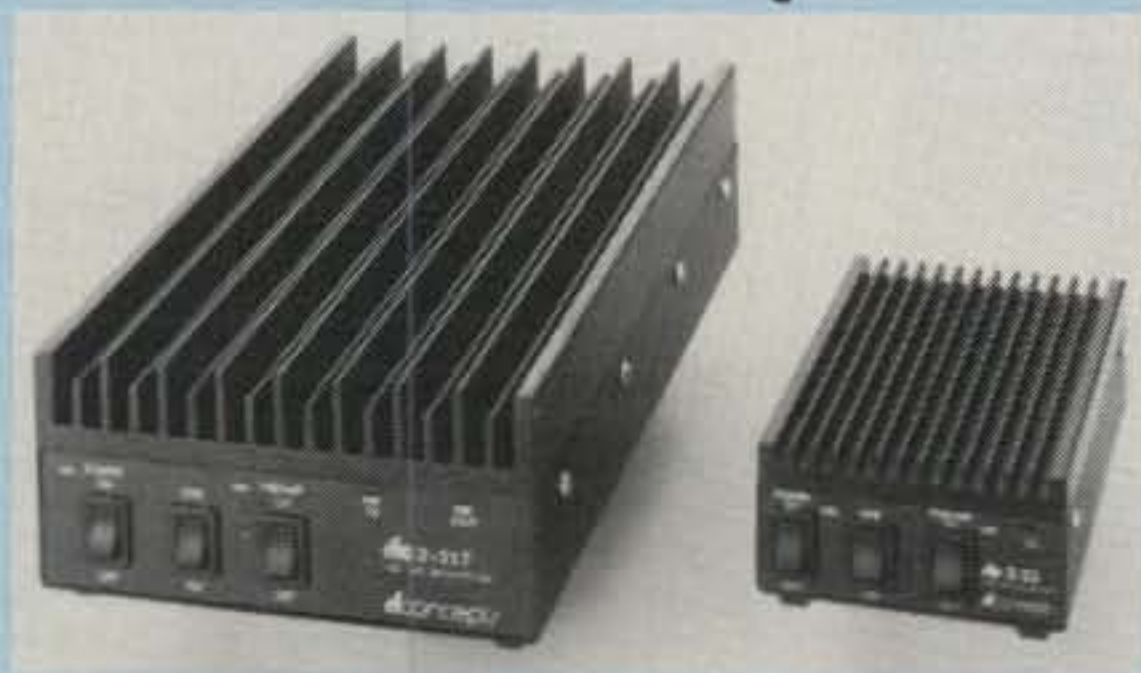
The maximum power rating the tuner will handle is 300 watts. MFJ's instruction manual, which by the way is excellent, carefully points out that the 300 watt level should not be used for more than two min-

utes, key down. In other words, the 300 watt rating is for CW or single-sideband, not RTTY. I tested the unit on RTTY at 150 watts and had no problems. Also, as pointed out in the manual, this unit, or for that matter any Transmatch, must be adjusted for a match using the lowest possible power. After a match is achieved, then, and only then, should power be

brought up to normal operating levels. Under unmatched conditions some very, very high RF voltages can be developed, causing arcing of components.

The 949C measures 10 1/4 inches wide, 3 1/4 inches high, and 7 inches deep. It lists for \$149.95 and is available from MFJ Enterprises, Inc., Box 494, Mississippi State, MS 39762.

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