

Once a mainstay of VHF/UHF weak-signal and satellite operators, the Yaesu FT-736R is often found today at bargain-basement prices on internet auction sites ... often sold as "not working" because of a failed power supply. W8DX offers tips on repairing and/or replacing the supply and bringing a "champion" transceiver back to life.

Rescue the Champion

BY HARVEY LAIDMAN,* W8DX



Photo A— The Yaesu FT-736R has long been a favorite of VHF/UHF weak-signal enthusiasts, particularly satellite operators.

The Yaesu FT-736R is a retired champion, a versatile VHF/UHF desktop jack-of-all-trades no longer in production. It comes with two meters and 440 installed, and allows you to install up to two more "band units" of your choice, for 50, 222, or 1200 MHz. It operates CW, FM (wide and narrow), and SSB. It can track satellites and may be computer controlled using the "CAT" system. It has dual VFOs and QRM-fighting features similar to HF transceivers (IF Shift and Notch). Options include a keyer, CTCSS encoder/decoder, voice synthesizer, 800-Hz CW filter, TV 736 fast-scan interface, etc.

It's big as any HF transceiver (see photo A) and runs about 25 watts on 144, 222, and 440 MHz; around 20

watts on 50 MHz; and about 25 watts on 1200 MHz.

Biggest Problem— The Power Supply

A fair number of these are being sold on eBay. They are no longer supported by Yaesu, and the internal switching power supply often fails. When it was possible to get a replacement from Yaesu, the cost was nearly \$300. FT-736Rs can also run on an external supply. You simply unplug the jumper in the rear and install the DC cable. However, the internal power supply has always been one of the radio's strong points.

A symptom of a failing power supply is the need to cycle the off-on switch several times to coax the switcher to start oscillating. In most cases, this is due to a capacitor (C9) on the power-supply board becoming inductive (see photo B). If you examine the power sup-

ply, you probably will notice that the board is charred in the vicinity of the two large resistors, R17 and R18. C9 is adjacent to these two resistors. The components are well marked on the board. In one of my radios, I replaced C9 with a 220- μ F, 50-volt unit, and the problem was fixed. (Don't test the supply without a load, and be careful of voltages on the board.) My other FT-736R didn't do as well!

It's also possible that excessive heat has caused joints to become unsoldered and other components to fail, most often C12 and D6. I put the supply on the shelf to work on later. Then I started thinking: We've come a long way in switcher technology since the early '90s. This little switcher gets very hot with a 6- to 7-amp load. It's not particularly quiet, either.

Today's switchers are smaller, quieter, and more powerful. Many are made for the demanding medical field. The switching power supply I selected to replace the Yaesu supply is the V-Infinity VSBU-120-12 (photo C). It's a 12-volt, open-frame switcher rated at 10 amps, well over the 736's 6-7-amp load, and eureka! It's smaller. It has an internal EMI filter, surge, over-voltage, and overload protection. I purchased the supply from Digi-Key at a cost of around \$88.

Replacing the Power Supply

Remove the retaining screws holding the Yaesu supply, and the three screws that pass through the heat sink. Wipe off the thermal grease with a paper towel. Do this first, or you'll get the stuff all over. Unsolder the AC and DC wires. When you unscrew and remove the Yaesu supply from its aluminum "sled," you will be able to drill four mounting holes in the "sled" to mount the new supply on 1/2-inch spacers. I originally used

*22918 Crespi Street, Woodland Hills, CA 91364-2807
e-mail: <hsl@sbcglobal.net>

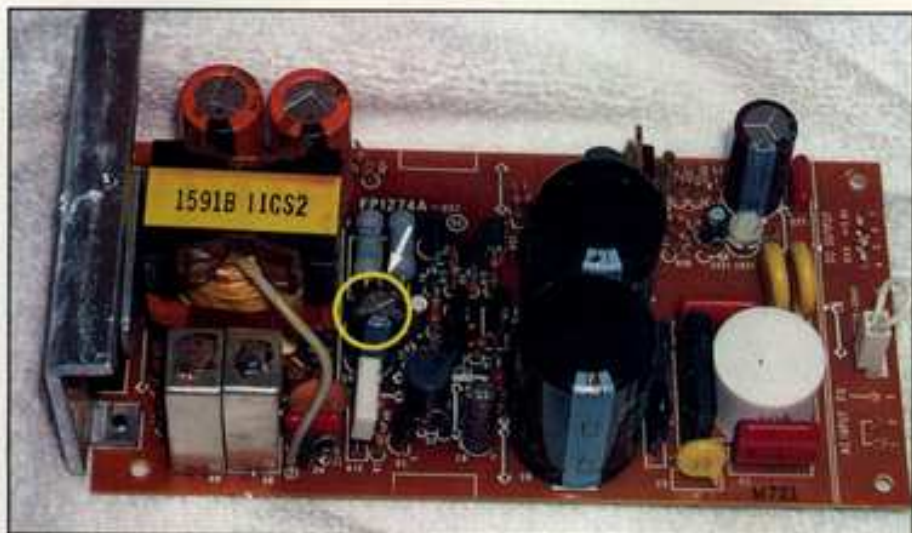


Photo B— The FP127RA stock power supply. Capacitor C9 (highlighted) often fails with age. Sometimes replacing the capacitor will bring the unit back to life. Other times you may need to replace the entire power supply, as explained in this article.

flat-head screws and countersunk the holes, but then I realized that there's some play in the way the little "tongue" fits into the chassis slot. Regular, pan-head screws should take up this slack, and the "sled" is secured with the original mounting screws (see photo D). The 10-amp supply has its own heat

sink and runs quite cool at 60% of its rated power.

The two white AC wires and the DC wires connect to the supply using Molex™ connectors. Since you are purchasing an OEM unit, you'll just receive the bare supply. I suggest downloading the data sheet from the Digi-Key site.



Photo C— The V-Infinity VSBU-120-12, in the foreground, was used as a smaller, quieter, and more reliable replacement for the '736's original FP127RA power supply.

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Photo D- The FT-736R with the new switching power supply (top) installed.

You'll need Molex™ housing 09-50-3051, and 2878 crimp terminals. This is a five-pin housing and you can use three of them—one for the AC side, two for the DC side. Just be careful to slip them over the proper pins! AC goes to the two outer pins of the three-pin connector. Positive DC comes from pins 1–6 and negative from 7–12 of the 13-pin connector. Pin 13 is a power-fail detect input, and unused. As you look directly at the 13-pin connector, pin 1 is on your right.

Other Fixes and Improvements

If you obtain a '736 without the FTS-8 CTCSS encoder-decoder, PIEXX Electronics makes an exact drop-in replacement, the FTS-8px, for \$79. The original, Yaesu FTS-8, sold for nearly \$200! The meter lights have a very short life. They are accessible by folding down the front panel and slipping them out of the rubber grommets. Replace them with T-1 14-volt lamps with insulated leads, All Electronics cat# LP-6, \$1.20 for two. Behind the panel, the lights are very dim but definitely there!

My FT-736R runs all day, and I can monitor two different bands. State-of-the-art advances in switching power supplies can bring new life to a champion radio! ■

Resources

Digi-Key Corporation, on the web <<http://www.digikey.com/>>; phone 1-800-DIGI-KEY.

PIEXX Company, 13 Main Street, Hillsboro, NH 03244; phone 603-464-5625.

All Electronics, on the web <<http://www.allelectronics.com/>>; phone 1-800-826-5432.



Photo B- The FP127RA stock power supply. Capacitor C9 (highlighted) often fails with age. Sometimes replacing the capacitor will bring the unit back to life. Other times you may need to replace the entire power supply, as explained in this article.

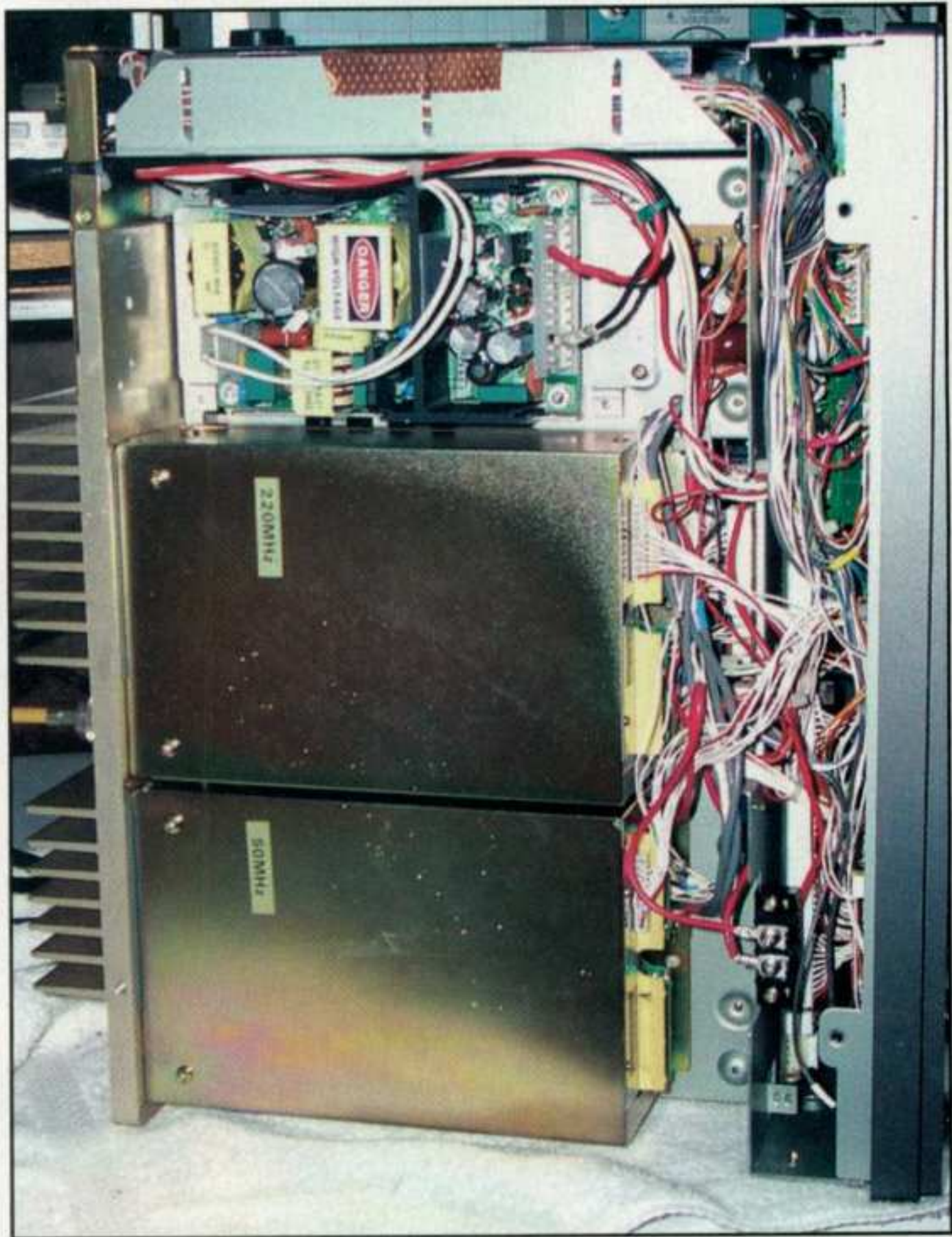


Photo D- The FT-736R with the new switching power supply (top) installed.