

Announcing the QRPeanut

Here's a compact QRP transmatch you can build for next to nothing.

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When I was faced with the need for a cheap and compact matching unit for portable, low-power operation, it soon became clear that my options were limited. Available units, I found, were larger than I needed for QRP. And besides, who needs an ATU rated at 200 watts when you're camping or backpacking on batteries at only five? Enter the forgiving beauty of QRP and a simple solution! Low voltages encountered at QRP power levels make ATUs easy to home-brew. And as they say about traveling, "Gettin' there is half the fun." Hence the QRPeanut.

Design and building details

Design of the QRPeanut is a straightforward adaptation of the classic T network as described by Doug DeMaw and others. The chief advantage of this design is its obvious simplicity (see Fig. 1). On the down side, it has a "high-pass characteristic," which means that it won't filter out spurious harmonics. However, if your QRP signal is clean to begin with, this shouldn't matter much.

I made L1, L2, and L3 from #22 enamel wire wound on toroids (Am-

idon T80-2 for L1 and L2, T80-6 for L3), chosen for low loss and compactness. (Toroids are easy. I would rather wind 10 of them than one of those cylindrical things.) The coils are center-tapped and mounted on a "one size fits all" type of circuit board from Radio Shack. After soldering, it's not a bad idea to check connections for DC continuity, since residual amounts of the wire's enamel coating will sometimes produce a bad solder joint.

Size and type of enclosure are mostly up to the builder, but the front panel should be nonmetallic for reasons I will explain later. I built mine in a five-inch by two-and-a-half-inch by two-inch ABS plastic box (Radio Shack 270-1803). *Important tip:* Unless you have the hands of a neurosurgeon and the patience of Job, wiring the rotary switch in place with a box this size will be nearly impossible. If compactness is your goal, consider wiring the toroid board to the rotary switch on a simple "jig" (see Photo A). Radio Shack was kind enough to package this line of enclosures with both a plastic lid and one made of aluminum sheet. I made my jig by drilling mounting holes for C1, C2, and the

rotary switch and then adding a right angle bend roughly one-half-inch wide for a foot. This allowed me to mount the jig on a small block of wood with screws, forming a stable base on which to work. The completed assembly was then removed from the jig and eased into the enclosure with a little wire bending where appropriate.

The stiffness of the wiring is probably enough to hold the board in place. I used a lump of Coax Seal® as additional insurance. An inductance meter is also handy for checking to be sure

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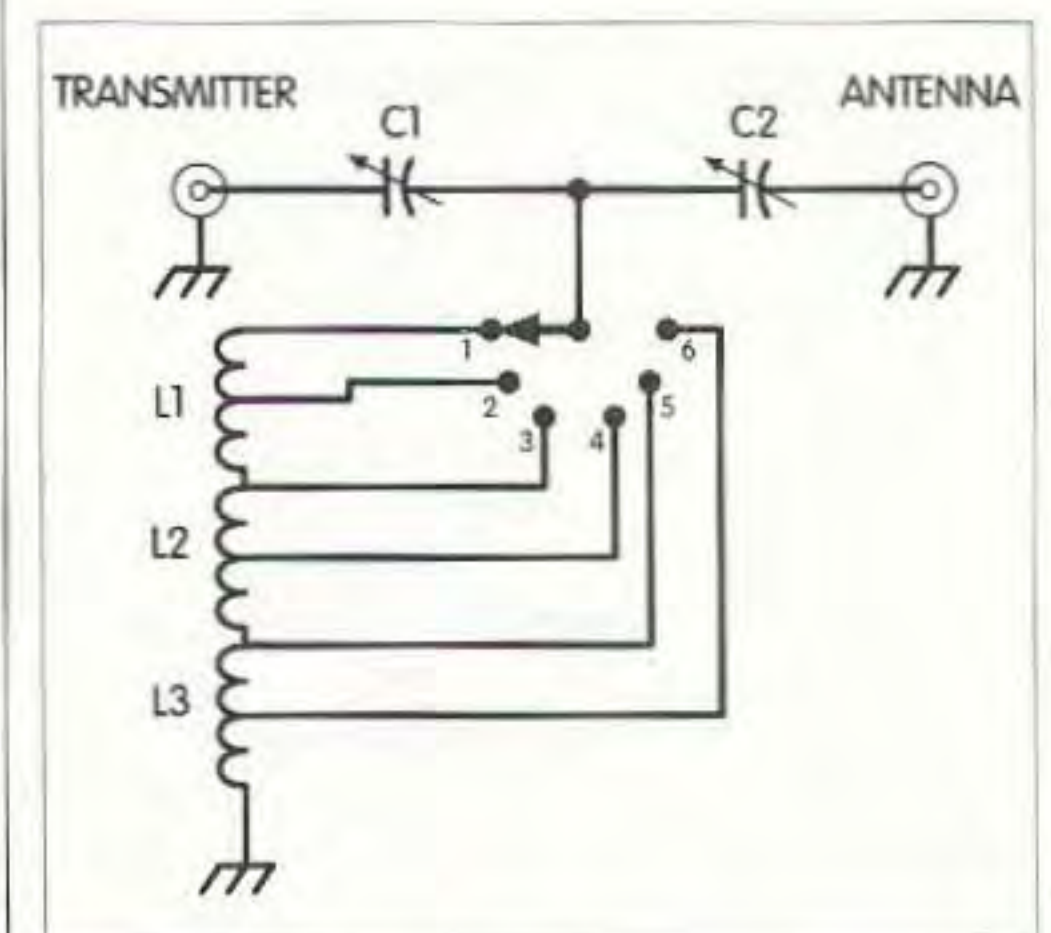


Fig. 1. Schematic.



Photo A. The wired ATU on the assembly jig.

the rotary switch and toroids are wired correctly.

Since the affordable, air-spaced variable capacitor seems to be going the way of the dinosaur, I chose to use a type of mica compression trimmer having a built-in shaft (ARCO S463). There are tradeoffs. The S463 is a bit quirky; operation is not linear, and the metal shaft is electrically common with one side of the capacitor. *Do not attempt to use these capacitors mounted directly to a conductive panel.* They seem to work fine mounted on plastic and with plastic

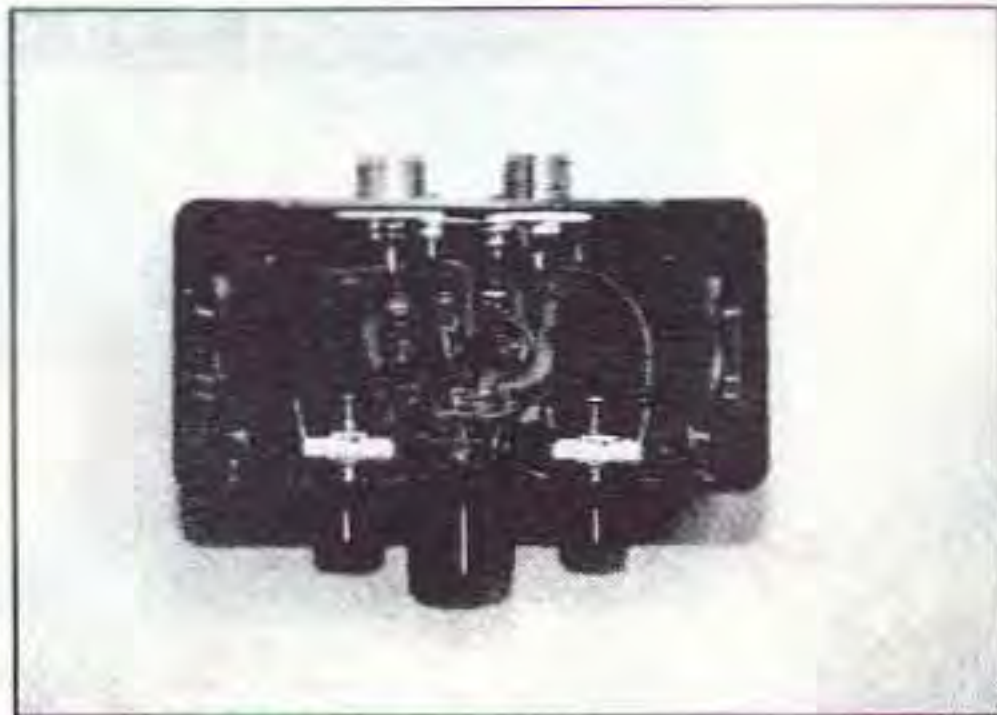


Photo B. Top view.

knobs. Since the single mounting screw is also “hot,” use nylon hardware or simply tape over it. (Did I mention the beauty of QRP?) All in all, a small price to pay for components that are compact and cheap.

Choose your favorite flavor of coaxial connector, but since the chassis is plastic, it's a good idea to strap the ground sides together with a bus. I used SO-239s for universality. You may want to build even smaller.

A couple of last tips about those cheap but quirky capacitors. For reasons unknown, shaft diameters are a hair larger



Photo C. Front view.

than one-quarter inch, so it may be necessary to drill the knob collars to a slightly larger size; 17/64-inch is about right. Hold them for drilling by making a hole in a piece of wood in which the knob will fit snugly. Also, giving the adjustment screws at the back of the capacitors a squirt of contact lubricant (I used Caig DeOxit®) makes operation smoother and should improve service life.

Remember when operating that most of the range of the capacitors is in the last two clockwise turns. Other than that, the QR Peanut works like any other transmatch. 73

Parts List

C1, C2	ARCO S463*
L1	28 turns #22 enameled wire on Amidon T80-2 core, center-tapped
L2	24 turns #22 enameled wire on Amidon T80-2 core, center-tapped
L3	18 turns #22 enameled wire on Amidon T80-6 core, center-tapped
Rotary switch	2-pole, 6-position, RS #275-1386, cut shaft to 5/8"
Toroidal cores	2 ea. Amidon T80-2 (red) 1 ea. Amidon T80-6 (yellow)
Circuit board	RS #276-159
Enclosure	plastic, 2"x2-1/2"x5"

* Source:
Surplus Sales of Nebraska
1502 Jones Street
Omaha NE 68102

Table 1. Parts list.