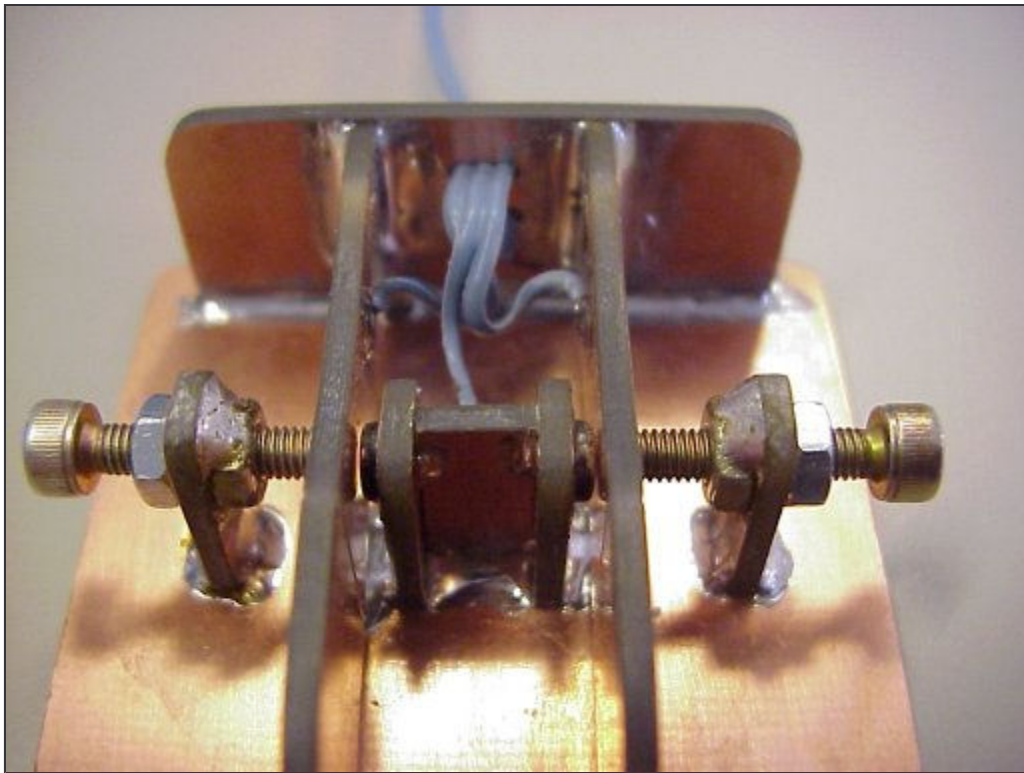


Double Lever Paddle

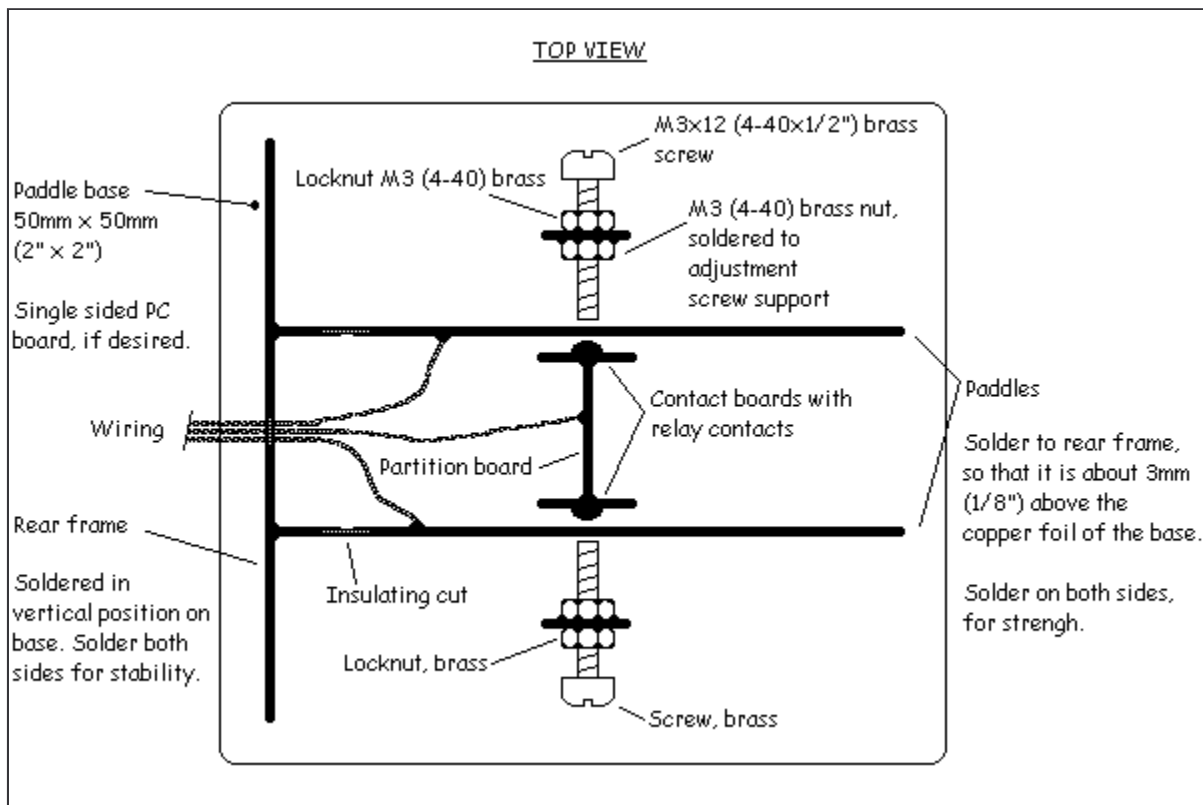
Wayne Mc Fee, NB6M created a simple and easy to build CW paddle made from PC-board. Using Wayne's idea as a foundation I designed a double lever version for iambic keying. Please read [Wayne's article](#) for a better understanding of what's meant below.

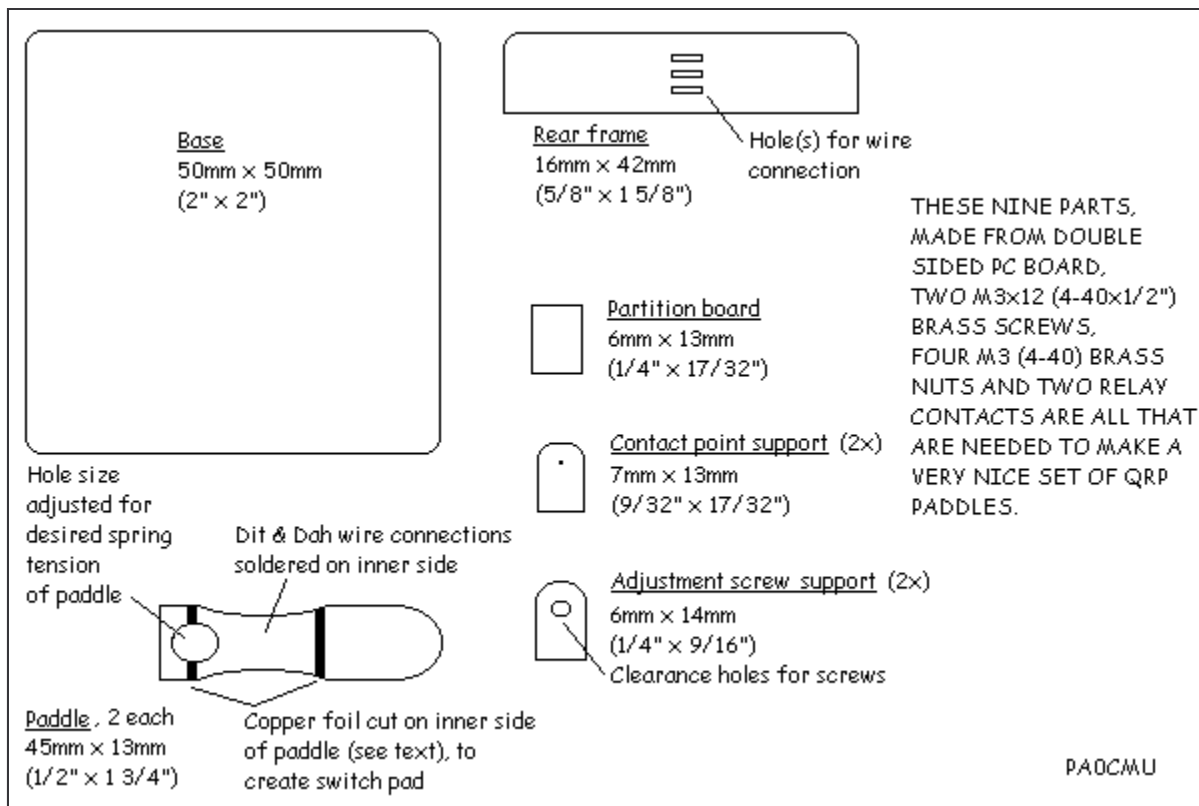
The first idea was to have an upright screw in between the two paddles, and leave the spacing for each one (away from the centre screw or contact) just a little greater than necessary when soldering the two paddles into place. Then, after enlarging or adjusting the holes in the paddles for whatever tension is needed, the two adjustment screws could be used just as for the single paddle, but they would push each paddle closer to the central upright screw.

The idea of the upright screw seemed to be nice, but my Bencher BY-1 has a paddle distance of about 13mm (1/2") and I'm used to that. Of course I could use two upright screws, but considered that using PC-board was a better option.

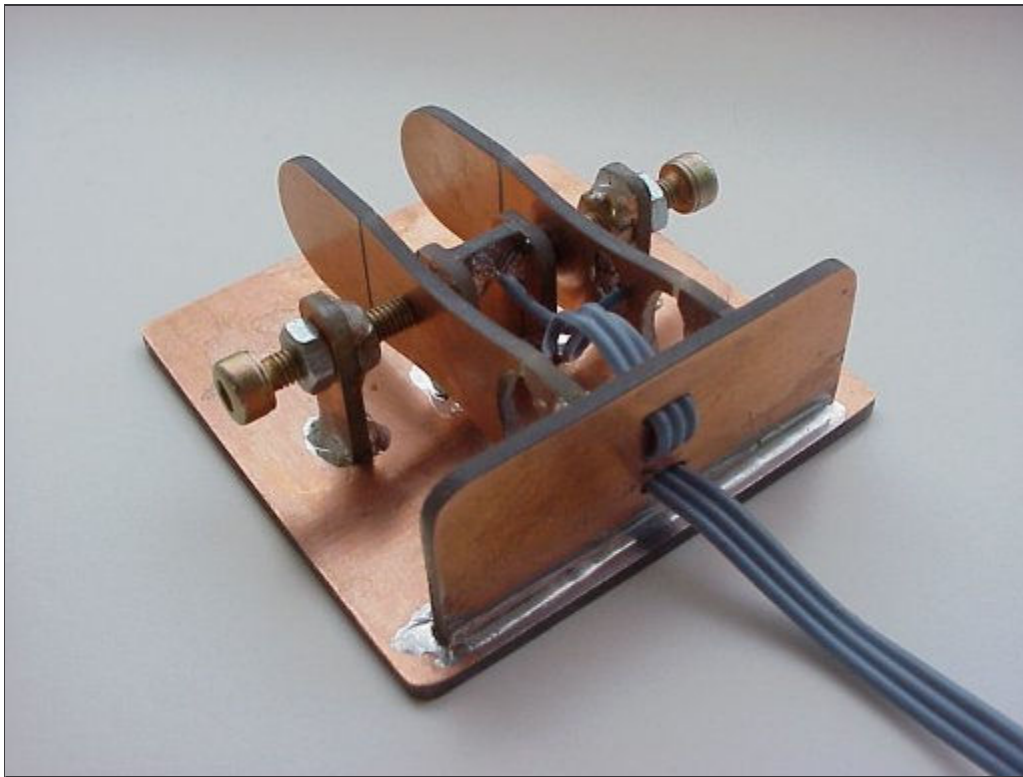


To get an idea of what you are building, have a look at the drawings. You will see that the whole setup is very simple.



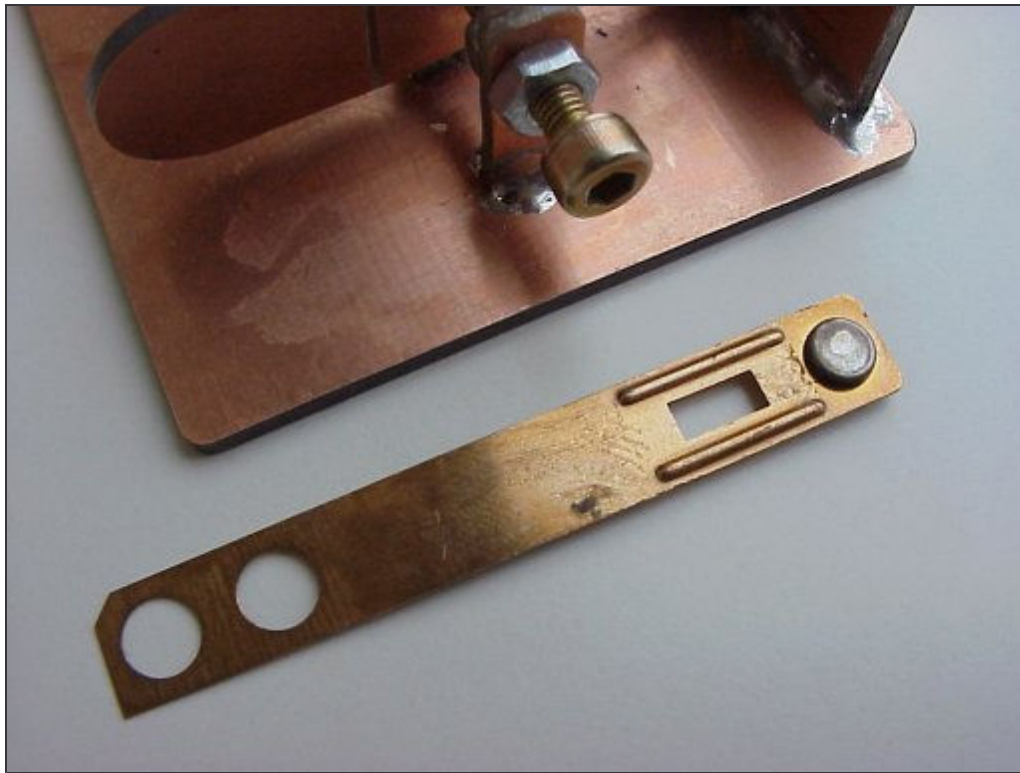


The rear frame, paddles, two adjustment screw supports, partition and contact boards are all made out of double sided PC-board material. Due to the fact that two pieces of PC-board don't make reliable contact, I used two contact points of an old, but never used relay. The next description counts on the enlarging of the width of the paddle by 13mm (1/2"). If you prefer another paddle distance, change the dimensions of the base plate, rear frame and (contact point) partition board.



Using the pictures as a guide, first cut out and shape the parts made from PC-board material. The dimensions of the base plate are 50mm x 50mm (2" x 2"), and the rear panel is 16mm x 42mm (5/8" x 1 5/8"). My rear panel is somewhat higher to create more space for my fingers! The adjustment screw supports become 6mm x 14mm (1/4" x 9/16"); the contact boards are 7mm x 13mm (9/32" by 17/32") and the partition board is 6mm x 13mm (1/4" x 17/32") but it depends on the dimensions of the relay contacts.

Follow Wayne's description about drilling, filing and so on. With a pencil draw two axes. One from front to rear in the middle of the base plate and one from left to right also in the middle. This is the axis where the adjustment supports are soldered later. Solder one brass nut to one side of each of the adjustment screw supports, in order to provide the threads for the screws to fit into.



The relay contacts I used were nailed to a copper strip (see picture). With a wire-cutter cut the contact point to a circle of about 5.5mm (7/32"), remove the wire-edge with a file, drill a little hole in the contact point supports at 5mm (3/8") from the bottom to let the nailed part of the contact sink into the PC-board and solder the contact point to the support.

Set the rear panel in place, centred, and tack solder one edge. Check visually for proper placement and that the rear frame is perpendicular to the base. Then tack solder the other edge before running a bead of solder all along each lower side of the rear frame. Solder on both sides for maximum stability. Next, assemble and solder the adjustment screw supports. To help you positioning them is to screw a temporary M3x50 (4-40x2") screw through both supports, leaving about 30mm (1 3/8") space between the boards. Finger tighten the locknuts and solder tack the supports centred on the horizontal axis. Remove the long screw.

Now, at the intersection point of the two drawn axes, solder the contact point partition perpendicular to the base, then, mount the two contact point supports to the base plate and partition board. Check visually for proper placement!! The "H" should be exactly in the middle of the base plate. Mount the adjustment screws and locknuts.

Finally, the paddles. Because your fingers would never touch the inner faces of the two paddles, you would not need the insulating cuts out towards the ends of the paddles, only the ones at the tension adjustment holes. It is also totally unnecessary to make the

insulating cuts in the outer two sides of the two paddles as shown at the photos, but I blindly copied Wayne's design. So, place the first paddle in position between the adjustment screw and contact point butted up against the rear frame. The upper edge of the paddle should be equal to the top of the rear panel.

Finger tighten the adjustment screw against the paddle, which will hold the paddle pretty well in position while you then tack solder each side of the paddle against the rear frame and then run a bead of solder along the edge of each side of the paddle where it butts against the rear frame. Don't forget to place some piece of material (paper, plastic) between the paddle and contact point relative to the desired contact distance you want.

Try to realise the most accurate desired contact space without adjusting the screws because the adjustment screw will increase the tension in the paddle! Repeat for the second paddle.

Now, adjust the screws for an equal dot and dash space. Use phone plugs for wiring up the paddle or solder the wire directly to the paddle as I did. It's up to you.



The fantastic world of QRP exist due too the use of CW. Enjoy it, perhaps with the help of these easy to build PC-board paddles.

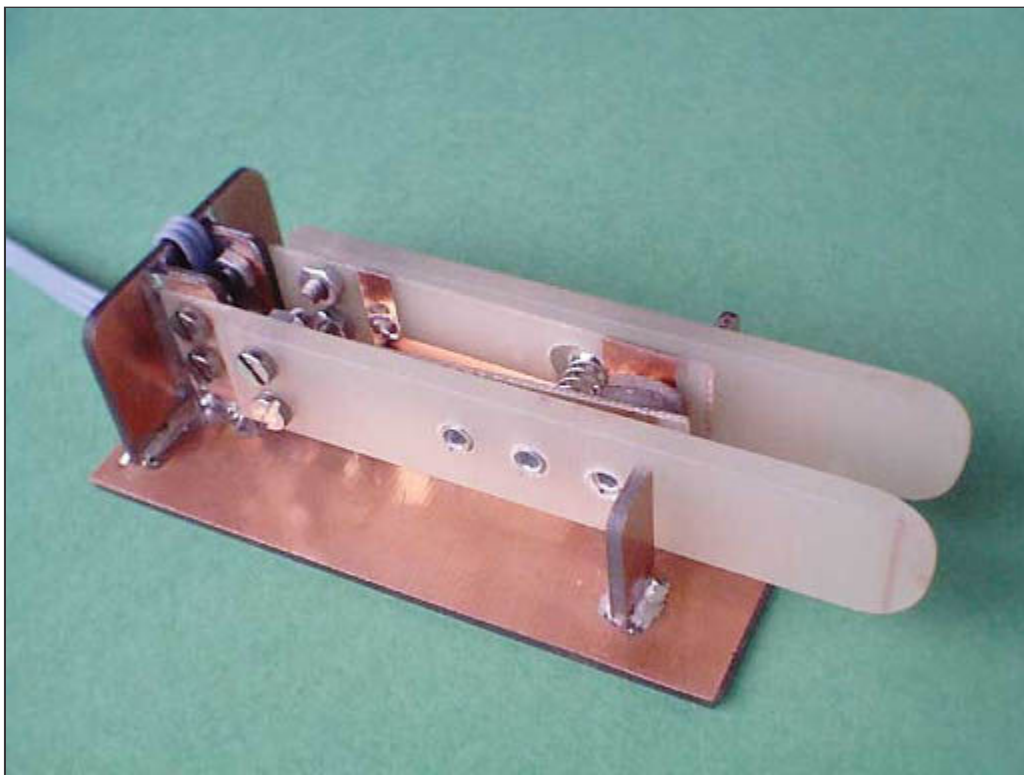
 [Download pictures and drawings of my "Double Paddle" here.](#)

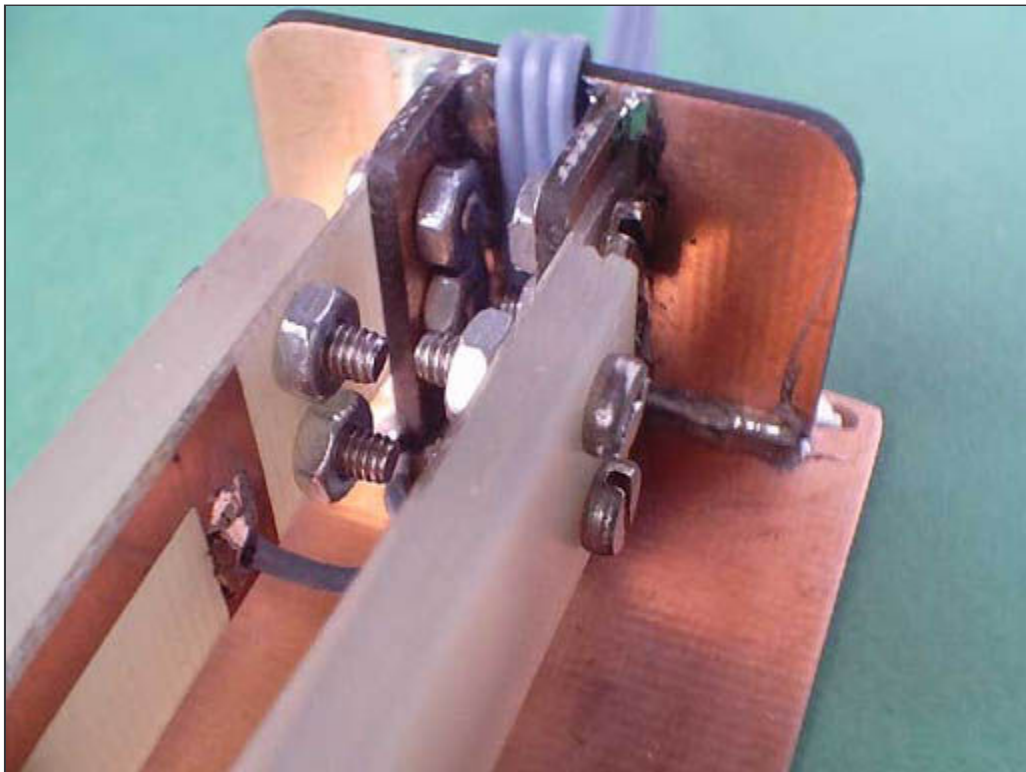
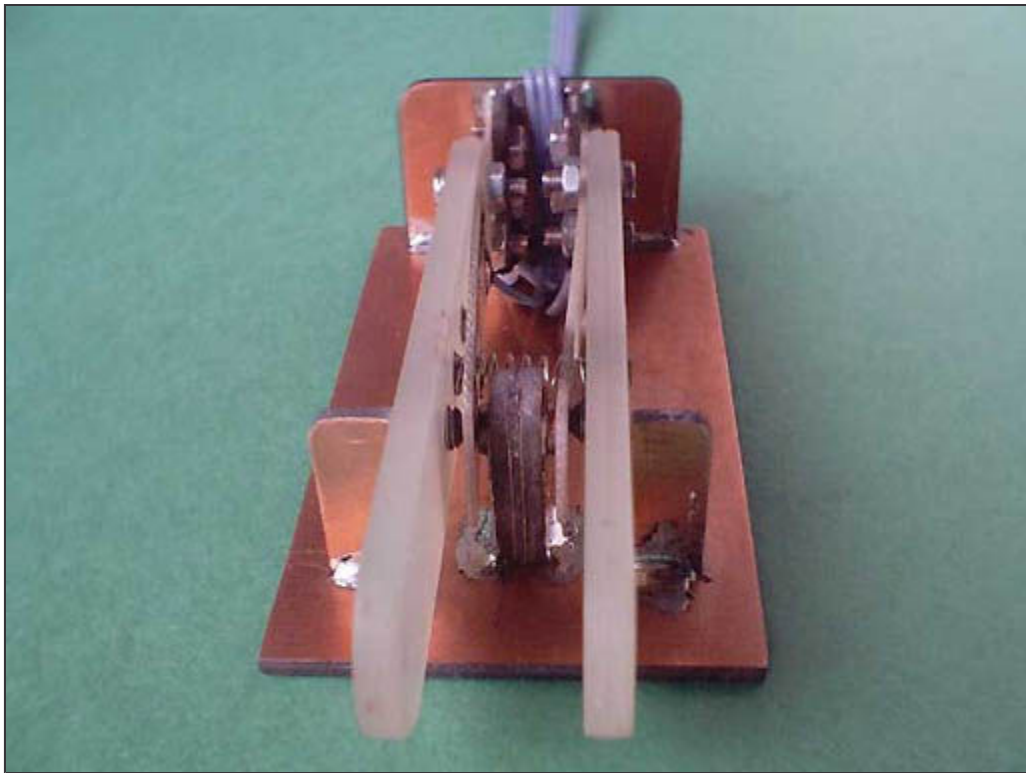
 [The NB6M Paddles](#) (The NorCal Page, QRP, Low Power Amateur Radio)

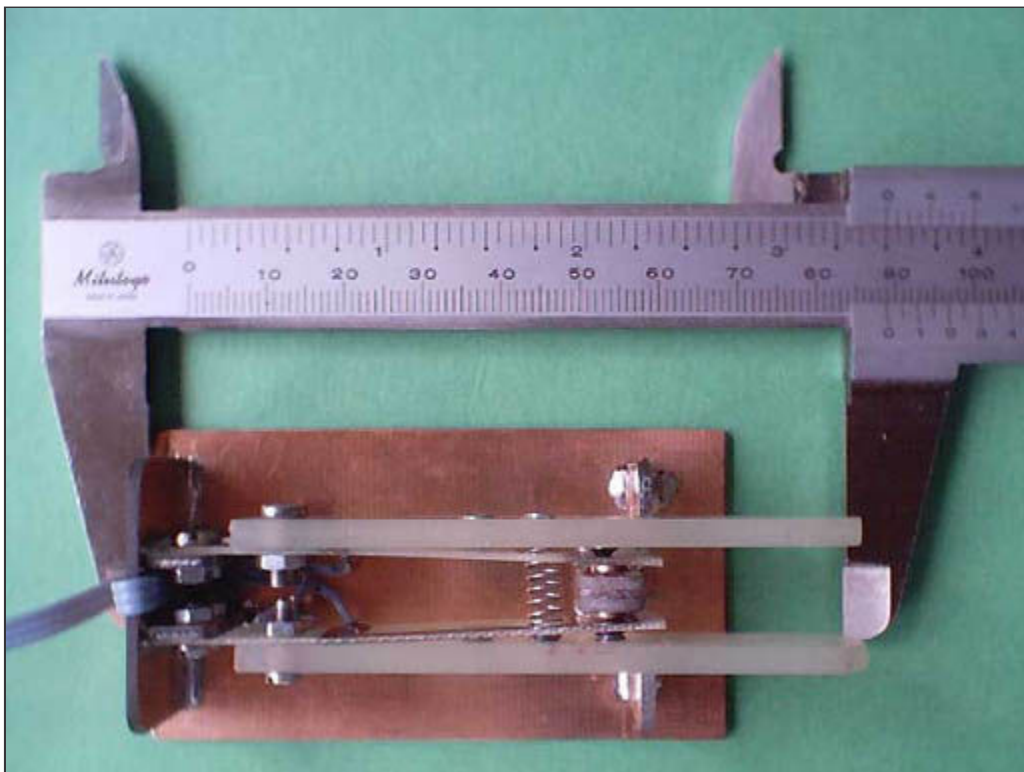
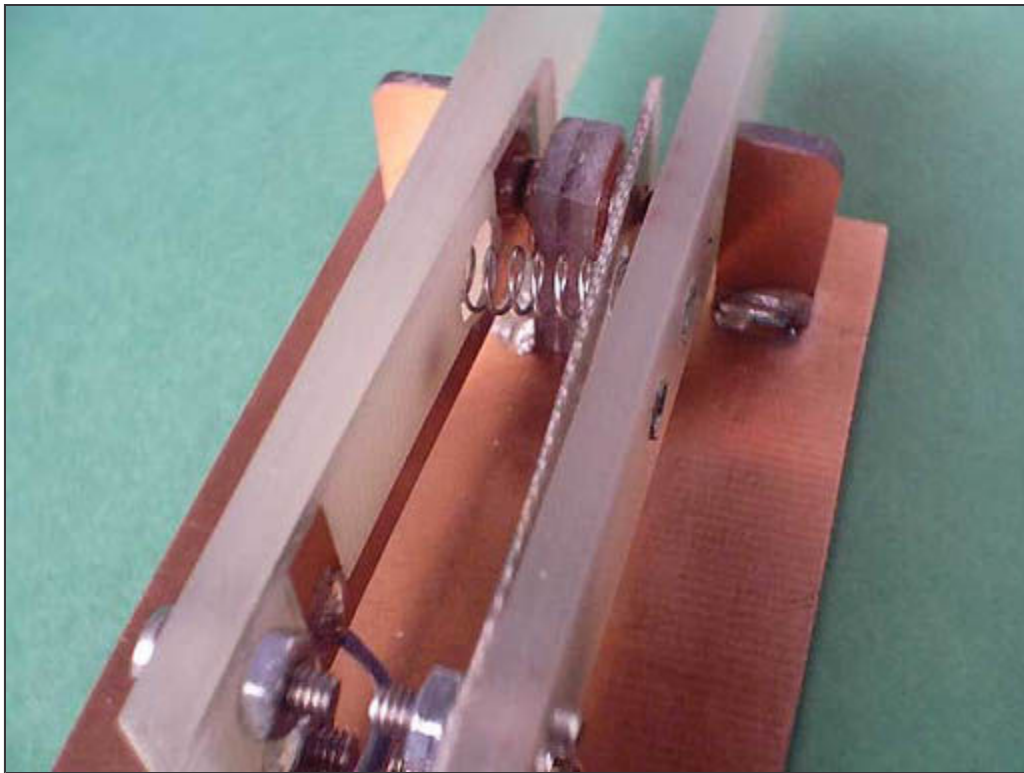
[My Look-Alike "Palm Mini-Paddle"](#)

By all means I am a homebrewer. Saving money isn't a goal. I just want to try (re)building things that are professionally made, at least, if I think I'm able to do so.

During the Easter holidays of 2003, I started the construction of another iambic paddle based on the design of the [Palm Radio Mini-Paddle](#). The photo's from internet are clear enough to get an idea of how the paddle is constructed. When I received a picture of the Palm paddle from a fellow amateur with a ruler next to it, I got started. All material is PC-board again. For the levers I glued two pieces of PC-board together using 2-component glue from Bison. Used tools: fret saw, file, sandpaper, drilling machine, screwdriver and M4 tap, all present in each amateur shack I guess. Below are some pictures of my prototype version. And....it works great!

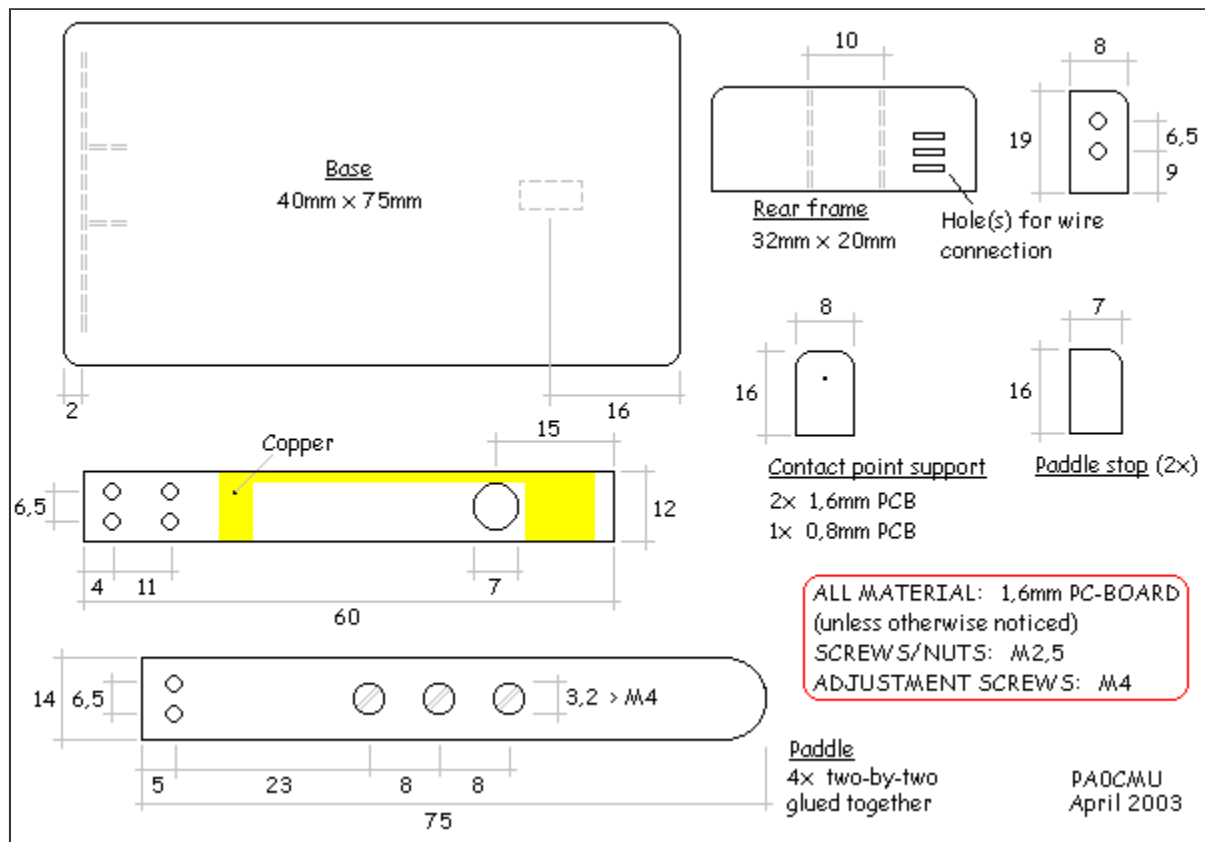






The pictures are made with a cheap webcam so quality isn't super.
The overall dimensions are: 89mm(L) x 40mm(W) x 22mm(H). The baseplate doesn't have to be that wide, but it's an experiment you know!
Comparing both PC-board paddles, the Palm design feels completely different from the

tiny paddle. The possibility to adjust spring tension, contact spacing and paddle stop are the advantages of this design.



[Download pictures and drawings \(GIF + AutoCad2000\) of my "Palm Paddle" here.](#)