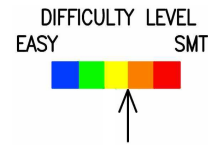




QRP Builder KX Single Lever Mini Paddle Kit



First, familiarize yourself with the parts and check for all the components. If a part is missing, please contact us and we will send one. Be sure to check inside the vinyl caplug for any small washers. Email grpbuilder@gmail.com to request a part, or for any questions.

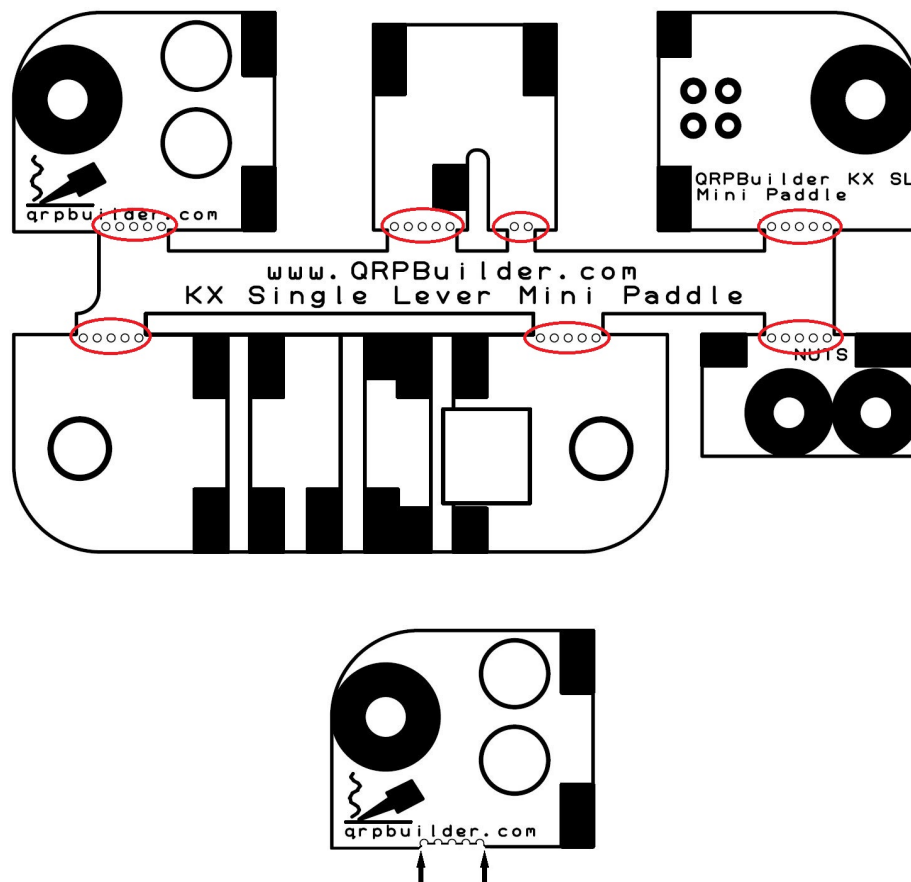
Parts List

- 1 – QRPBuilder KX Single Lever Paddle PCB
- 1 – J1, 2x2 female right angle header
- 1 – SS paddle leaf, 1.31" long
- 2 – 4-40 x 3/16"L thumbscrew
- 1 – 4-40 x 3/8"L SS pan head Phillips screw (*used for soldering assembly holding*)
- 2 – 4-40 x 1/2"L SS pan head Phillips screw
- 2 – 4-40 SS nut
- 2 – 4-40 brass nut
- 2 - #4 SS lock washer
- 2 – #4 SS flat washer
- 2 – 2-56 x 3/16" SS pan head Phillips screw
- 2 – 2-56 brass nut
- 2 - #2 SS lock washer
- 1 – 4-40 x 1"L pan head screw
- 1 - 1/2" wide x 3"L plastic shim
- 1 - 1/2" x 1.5" vinyl caplug

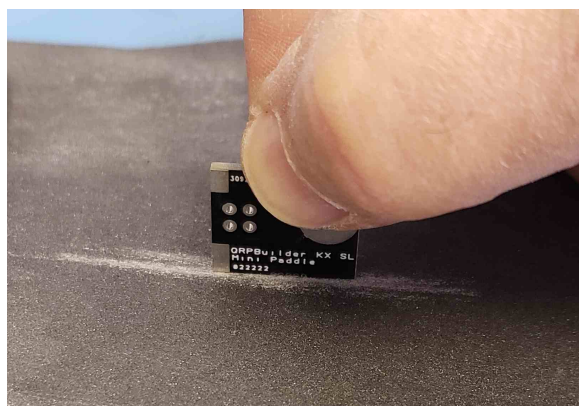
Even if you have done radio kit assembly before, please read through all the instructions before you start. This kit is a little different, in that the mechanical components are parts of a printed circuit board. The instructions give you the scope of the project and an understanding of the techniques we have employed. You will be assembling the paddle from PCB material, and when assembled, also forms the electrical connections. There are solder pads and registration marks that must be observed so that when you tack and solder, it will make a sturdy mechanical and electrical assembly.

The tools you will need are a soldering iron with a small tip, solder, #1 Phillips screwdriver, needle nose pliers, tweezers for the small hardware, cookie sheet, and a flat surface to work on.

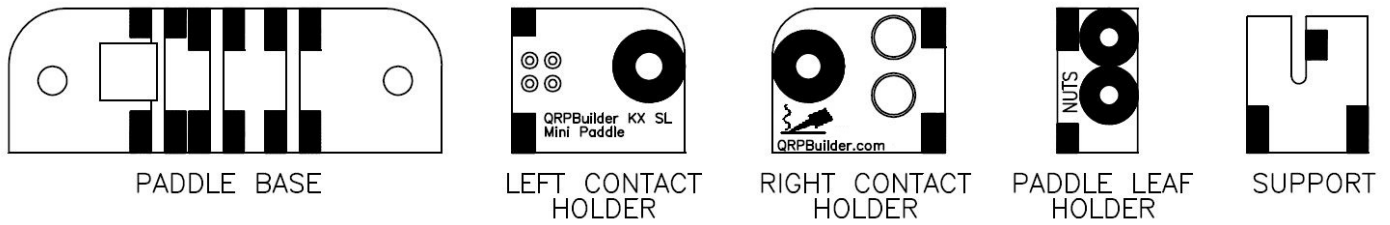
The board is shown below. Break the board into the individual pieces, discarding the center connecting spine. You may need to hold the spine with a needle nose pliers. If there are any protruding bits of pcb protruding below flat surfaces at the break points (shown in red), rub the edge on some fine emery paper to insure those edges are flat.



None of these 7 break areas should protrude beyond the edge of any of the boards. If they do, lightly rub on a piece of emery paper if needed. A light touch is all that is required. Like shown below.



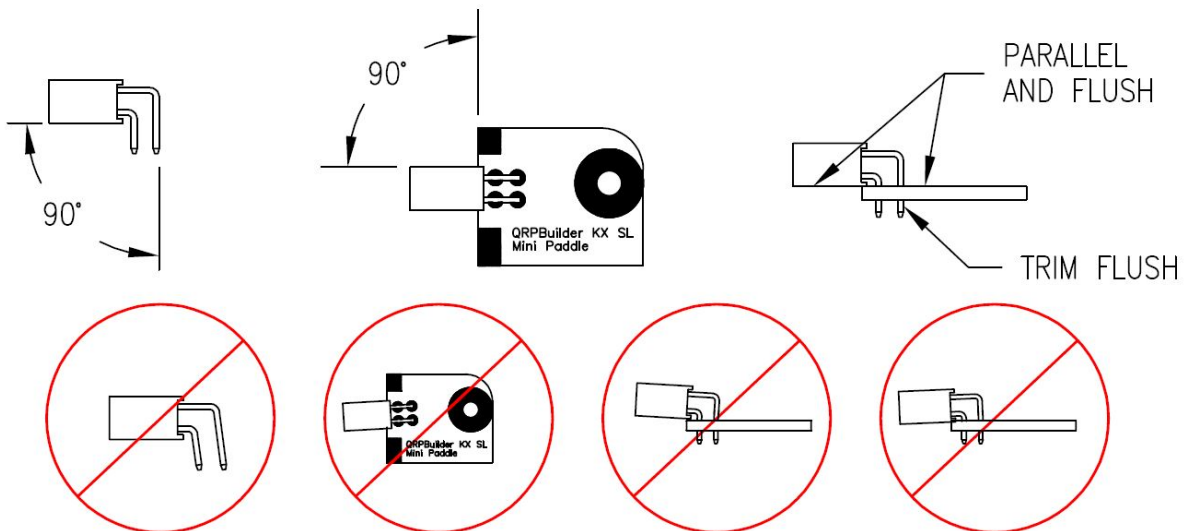
These are the five pieces and the names we will be using during the assembly.



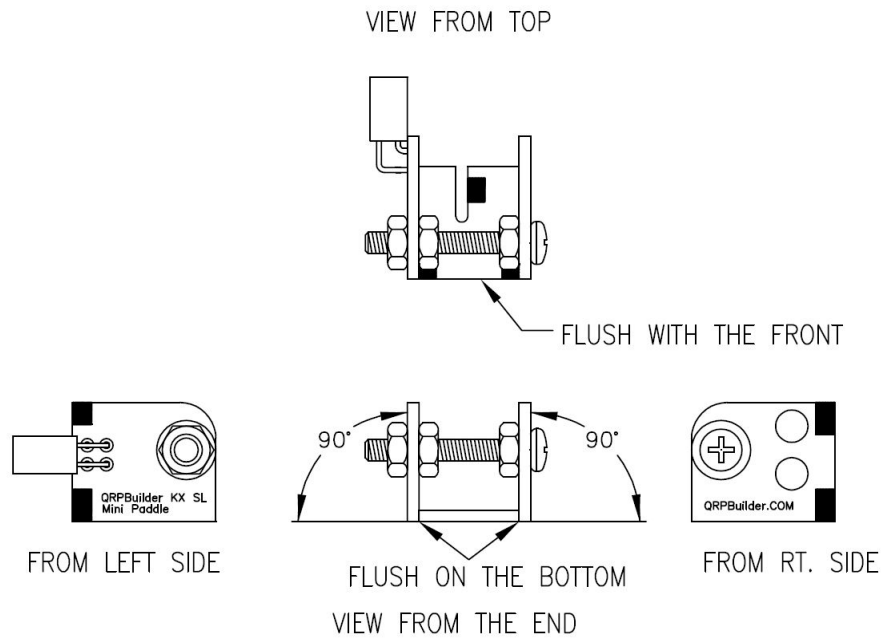
Important:

On all the soldering you do, you will use the same technique. You tack a single tiny point first and, then check to see that it is square and aligned with the registration lines and other notes. It is easy to re-heat the joint and adjust the alignment when there is only a single point. Then you tack the other pads, before you do the finish soldering. If you try to adjust without heating the joint, you will lift the pad off the board and ruin it.

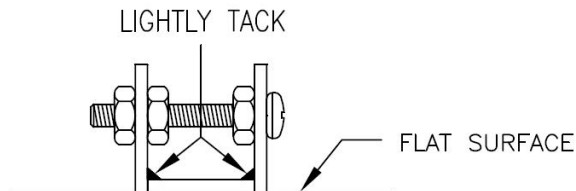
First, check that the pins on the female header are bent 90°, and correct if necessary. Solder the 2x2 female right angle header to the left contact holder on the side with the silkscreen. **Solder only one pin and check for it being flush and parallel to the surface of the board**, as shown in the graphic below. This is necessary so it aligns with the internal contacts of the transceiver. Solder the rest of the pins and trim flush with the back of the board.



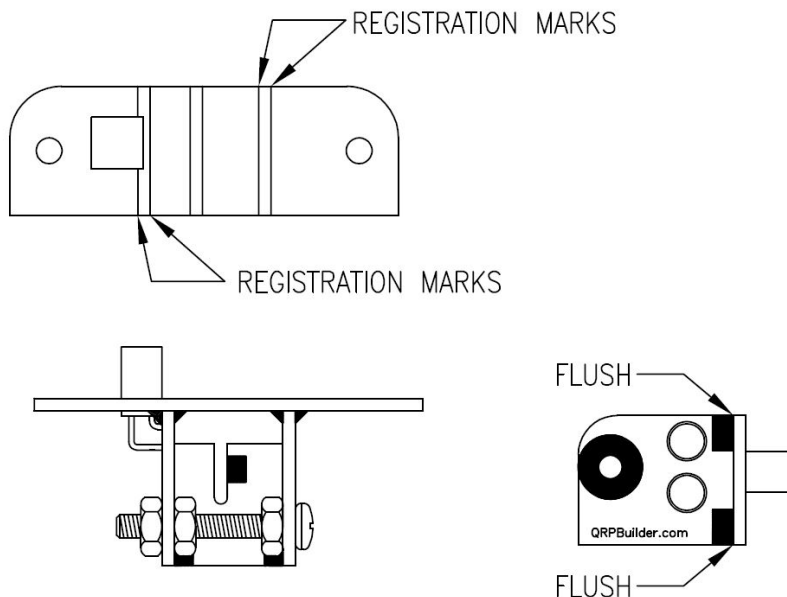
Next in the assembly, are the two **contact holders** mated with the **support**. Using the 4-40 x 1" long screw, assemble the two contact holders as shown in the figure below. You must adjust the nuts so that the support just does fit between the two contact holders, flush with the front.



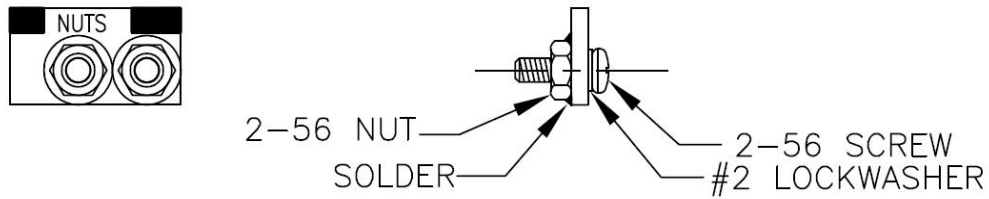
Once all this is aligned and secured, place on a flat surface, and put a “small” tack between each contact holder and the support. *Leave the support screw in place.*



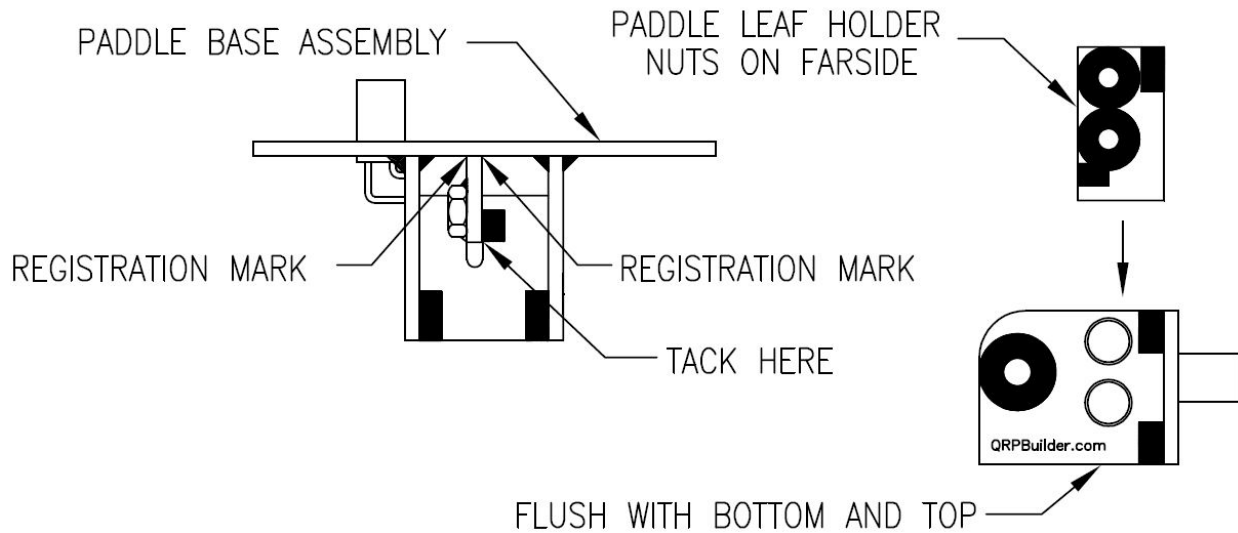
Next, position the **contact holder/support assembly** on the **paddle base** with the registration marks, and lightly tack a couple of points on the ends. The female 2x2 header should be centered in the cutout. If all looks good, tack both sides of the holders, and alternate back and forth between the two sides adding a little more solder. Finish soldering all the pads, and then remove the support screw.



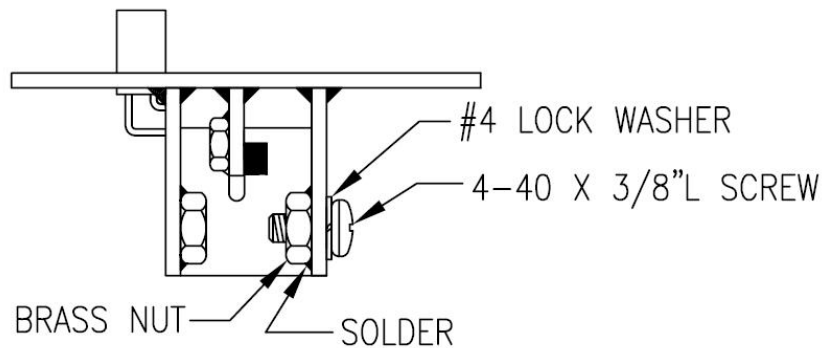
Next, solder the two 2-56 **brass** nuts to the **paddle leaf holder**. Use the two 2-56 stainless steel screws to secure the brass nuts on the side of the paddle leaf holder marked “**nuts**”, and solder the brass nuts to the PCB. *The lock washer insures that the nut will be flush with the PCB when it is heated.* It is helpful to rub the face of the nut on some scotchbrite or emery paper to clean up the surface contacting the PCB.



Next, position the paddle leaf holder with the nuts into the contact holder/support assembly as shown below, flush with the top, bottom and paddle base assembly. And yes, it is supposed to be snug in the support slot, to hold it in position while you solder. Tack one spot in place and check for alignment with the registration marks, re-heat and adjust if necessary. Tack all the remaining pads, then finish soldering the pads.

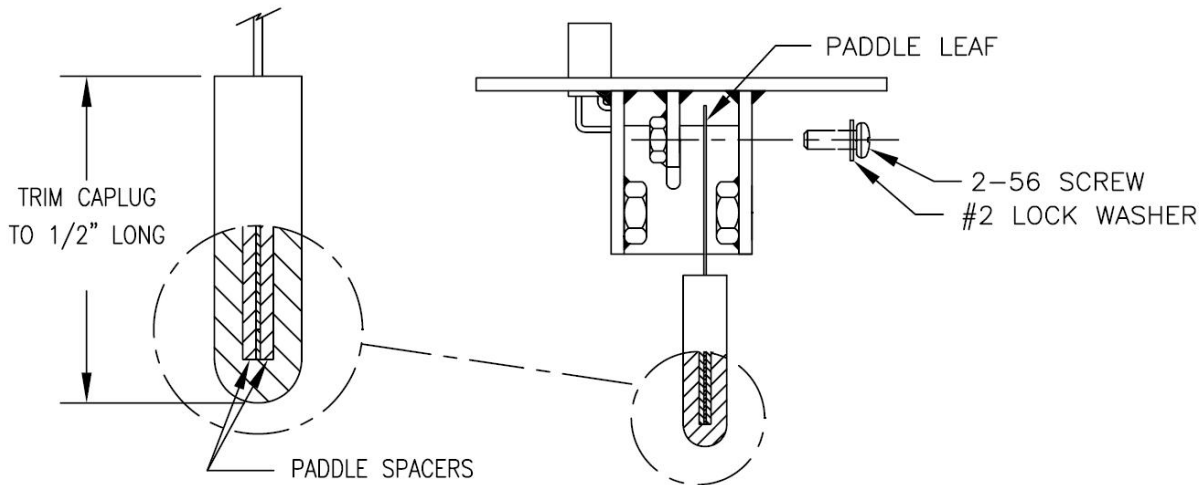


Next, the two **brass** 4-40 nuts need to be permanently soldered to the “inside” of both the contact holders. Use the 4-40 x 3/8”L SS screw, and, a #4 lock washer to hold them in place, and solder the brass nuts to the PCB. *The lock washer insures that the nut will be flush with the PCB when it is heated.* Rub the face of the nut on some scotchbrite or emery paper to clean up the surface contacting the PCB.



Assembling the paddle lever components:

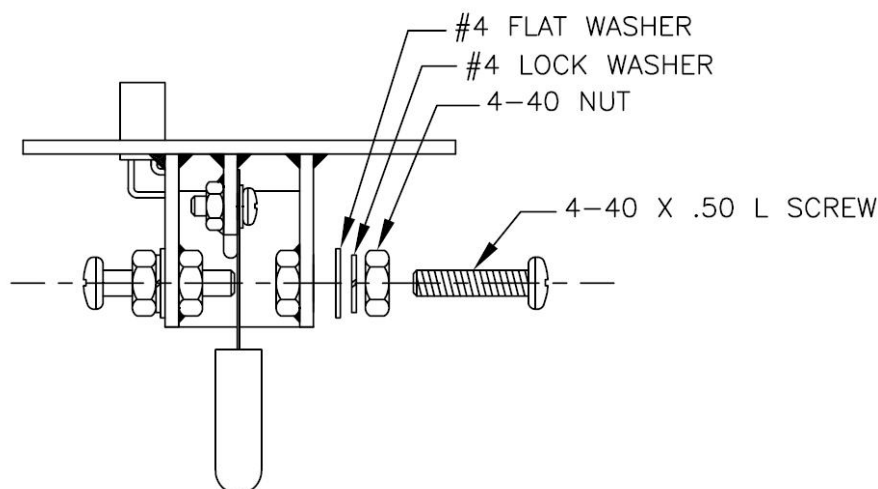
It's a good idea to assemble the hardware over a cookie sheet. Any hardware is difficult to find if dropped. Secure the paddle leaf to the holder using the hardware as shown. The hardware is small but with some patience and tweezers, can be assembled. It is easier to do the bottom screw first. Observe the order of the hardware. There are two clearance holes in the right contact holder for a small screwdriver to tighten the 2-56 screws. After assembly, if the paddle leaf holder is not perfectly square, the paddle leaf may be off to one side, or on an angle. Simply bend it to be centered between the two contact holders. **Center the paddle leaf before installing the contact screws.**



Cut the vinyl caplug lever cover 1/2" long from the closed end. Scissors will work easily. Cut the piece of 1/2" wide plastic into two 7/16" long pieces. Sandwich the paddle lever between the plastic spacers and slide the caplug over the end of the paddle leaf.

Installing the contact screws:

Install the contact screws to each contact holder as shown. Observe the order of the hardware. The contact distance to the paddle leaf can be adjusted from a few thousandths of an inch to whatever the user feels comfortable with for sending. Start with a small clearance, and increase if needed. Secure the nuts when satisfied.



This completes the paddle assembly. Use the two 4-40 thumbscrews to secure the paddle to the transceiver.

