

I too experienced the Toggle (Joystick) failure. I removed the Navigation unit and opened the display housing. On the inside bezel of the display I found 2 small circuit boards. I removed the small circuit board containing the joystick and found that all 6 solder connections were fractured due to the fact that the mounting bracket tabs that go through the circuit board were never soldered. The joystick is a surface mount device, and by not soldering the mounting tabs on the other side of the circuit board, will allow the solder joints to flex and eventually fail. Even though all 6 solder connections had fractured, I was still able to move left, down and select. Even though this is a surface mount device, the connections were easy to re-solder. After re-soldering the connections turn the board over and solder the mounting tabs. After the repair, the joystick worked great, more responsive than ever!

**NOW BEFORE GETTING ALL EXCITED AND RIPING YOUR NAVIGATION UNIT APART READ THE FOLLOWING WARNINGS!!!**

**PREFORM THESE STEPS AT YOUR OWN RISK, I AM NOT RESPONSIBLE FOR ANY DAMAGE CAUSED BY FOLLOWING THESE STEPS OR DUE TO ANY INACCURACIES IN THIS INFORMATION! THIS IS JUST WHAT WORKED FOR ME, AND I WANTED TO SHARE MY EXPERIENCE IN THE EVENT THAT IT WOULD HELP SOMEONE ELSE, YOUR SITUATION MAY BE DIFFERENT! IF USING ISOPROPYL ALCOHOL REFERRED TO IN THIS ARTICLE, READ THE WARNING LABEL!**

OK that was a little harsh, sorry about that!

Although this was not difficult to repair, it will require a great deal of care and a good mechanical aptitude, I cannot stress this enough!

In order to have access to the screws securing the bezel, I loosened the + battery cable and had someone pull it off just as I pressed the open button. This positioned the display out far enough to remove the

screws. I did find that I could manually move the display in and out by hand, but that puts a lot of strain on the mechanism, so I don't recommend it! I may have been able to fully open the unit and then remove it, but that may have made it more difficult or impossible to remove, possibly more susceptible to damage.

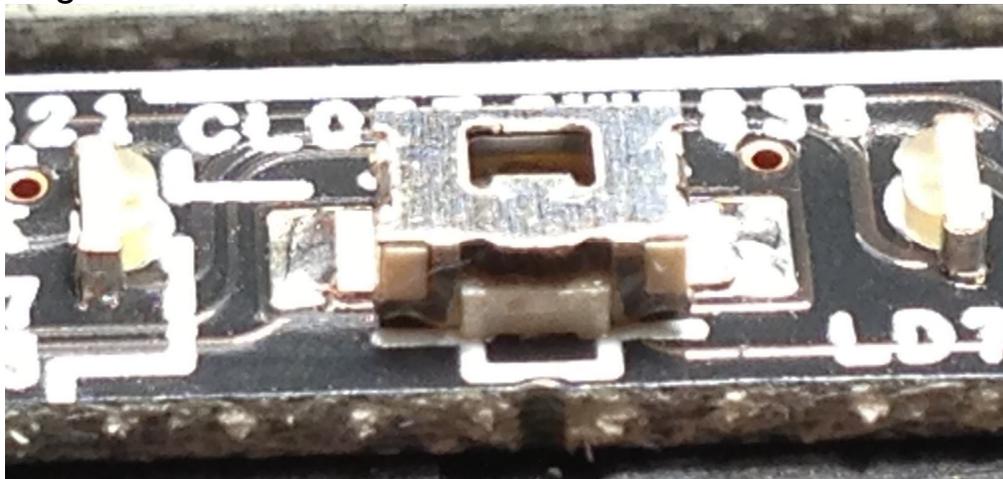
Removing the bezel from the navigation display was not that difficult, however when replacing it DO NOT SNAP IT IN UNTIL YOU GET THE CLOSE BUTTON TIT POSITIONED AGAINST THE FRONT OF THE CLOSE SWITCH, or you will shear the plastic close switch actuator off of the switch causing permanent damage!!! I know this first hand. Fortunately I found a replacement at Mouser, Part# 101-TS4722R2200-EV. The dimensions are exactly the same and it looks exactly like the original switch. The only difference is that the new switch doesn't have the two alignment bosses on the bottom, so I will have to position it manually by placing the switch on the circuit board and position it's solder tabs so that they are centered both vertically and horizontally on the solder pads. The switch actuator should line up with the markings on the circuit board (See Photos). The switch is very small, positioning and soldering it without the bosses is a bit of a challenge. Previous experience soldering surface mount devices recommended! Remove excess solder from the pads before placing the switch for soldering. The best way I found for removing excess solder is to use desoldering braid dipped in rosin paste flux (yes, I know you can get it with flux already on it, but flux it any way, it works much better). I have used a solder sucker in the past but the recoil from it some times knocked the soldering iron tip into the circuit traces, damaging the traces, and it was not nearly as effective and easy as this method!. Next tin soldering iron and wipe off (I prefer "Soldering Iron Tip Cleaning Wire Sponge" such as the one made by CML Supply" as opposed to a wet sponge. It removes the crust that forms on the tip, the wet sponge just isn't as effective and it cools the iron!). Finally tin the soldering iron again with a small amount of solder, place the flux dipped braid on the solder pad and heat the braid with soldering iron. Don't overheat or you will damage the circuit traces, that's why proper preparation is so important before removing

solder with solder braid. The key here is to get the heat flowing in the braid fast, see some solder wick into the braid and remove the heat, then repeat if necessary. If solder isn't flowing right away, don't just keep trying to heat the connection, something is wrong, you need to fix the problem and try again! Once you have removed the excess solder, clean the solder pads and surrounding area with "Technical Grade Isopropyl Alcohol" such as "Pure Tronics Isopropyl Alcohol / 3125. Wet a cotton swab with alcohol and wet the pads with it, then immediately use a dry cotton swab to remove the flux and alcohol. Now use canned air to quickly remove any remaining alcohol. Next apply fresh rosin paste flux to the solder pads and switch terminals. Position the switch on the circuit board. You'll need a magnifying glass and lots of light to verify it's position. I use a light with a built in magnifying glass mounted to my desk so I have both hands free! Cut a piece of tape 1/16" wide by 2" long and stick it to the top of the switch at 90 degrees to the terminals to help you position it. Once in position stick the tape to the circuit board and housing to hold the switch in place for soldering. With a clean fine point soldering iron, touch the tip to one of the solder pads being careful not to move the switch by touching the solder tab on the switch and apply some solder. Heat the pad just long enough for the solder to flow to the switch tab you may have to touch the edge of the switch tab (ever so gently though the switch will move very easily) to get the solder to flow to it. Check the switch alignment, if still aligned, solder the other side. Check to see if the switch feels secure, if so then resolder the first tab, add a little bit of solder and make sure to touch the edge of the switch tab and the pad on the circuit board. If both sides seem to be soldered ok then use some isopropyl alcohol on a cotton swab to clean the solder connections. Don't flood the switch with alcohol, doing so may wash a dilute solution of flux into the switch and leave a flux residue on the switch contacts, possibly causing a switch malfunction. If that happens then the switch needs to be flushed with sufficient clean alcohol to rinse away the flux residue and then use canned air to remove the alcohol. If you need to flush the switch do it with the navigation unit sitting in its normal orientation so that the close switch actuator is facing down. This will insure that the alcohol does not wash into the navigation unit. With the flux removed you will now

be able to do a better inspection of the solder connections. Check continuity across the switch (Try to get your probes on the circuit board pads, not the switch tabs, that way you will be checking the solder connections as well as the switch contacts.) then carefully push the black actuator while hold the meter probes with the other hand. Careful don't break it, push from the edge of the circuit board towards the metal switch body. If that doesn't make sense and it's not obvious which way to push it then skip this test, you'll find out after you reassemble everything. If you were successful the meter will go to 0 ohms when the switch is pressed.

Sorry for this long dissertation to those of you who have proper soldering skills, but I would hate to tempt someone into trying this with out knowing what they are getting into!

Original switch with broken actuator



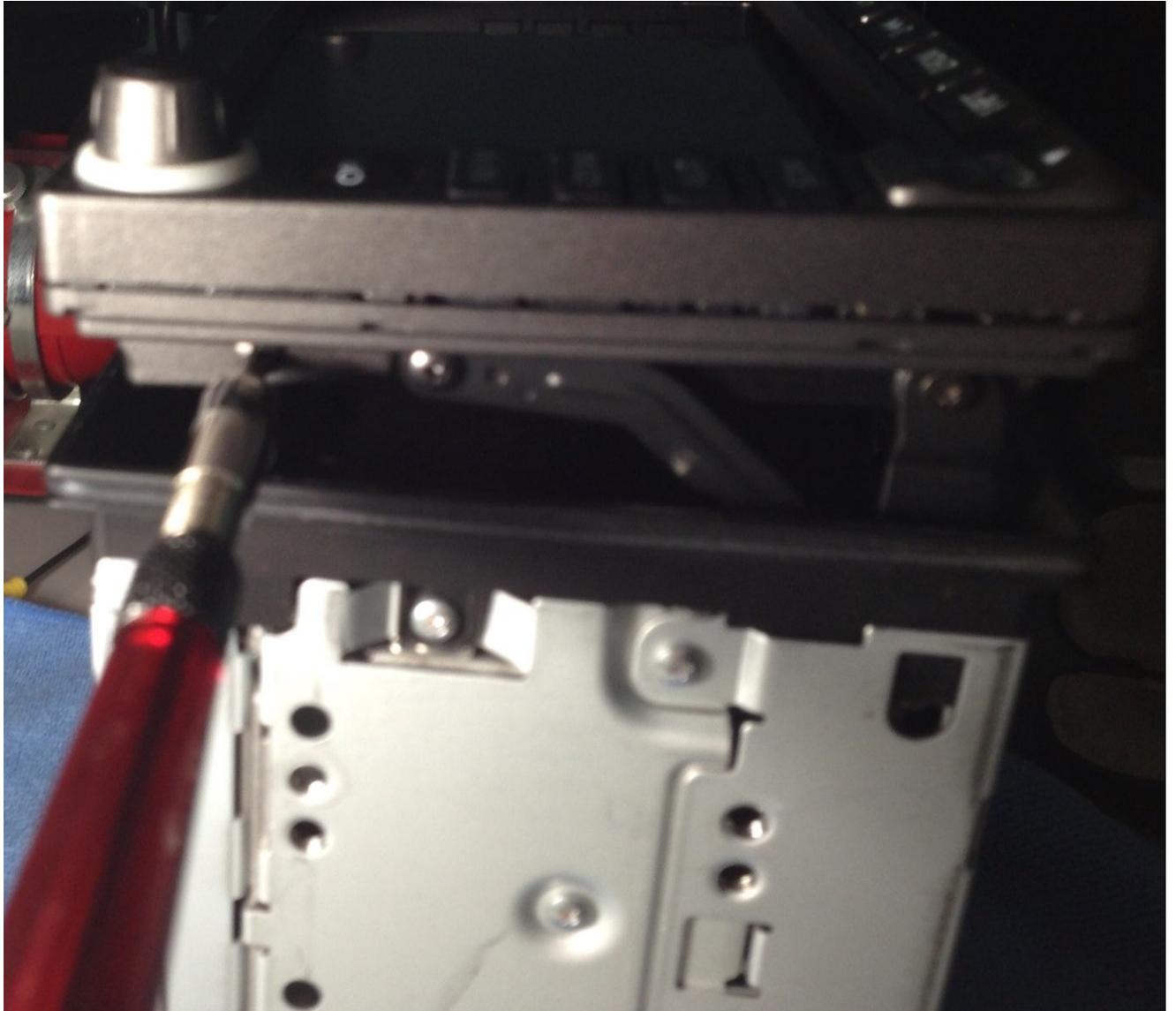
Switch removed & excess solder removed from pads



Here's how to remove the bezel:

Remove the three screws securing the bezel to the display housing:

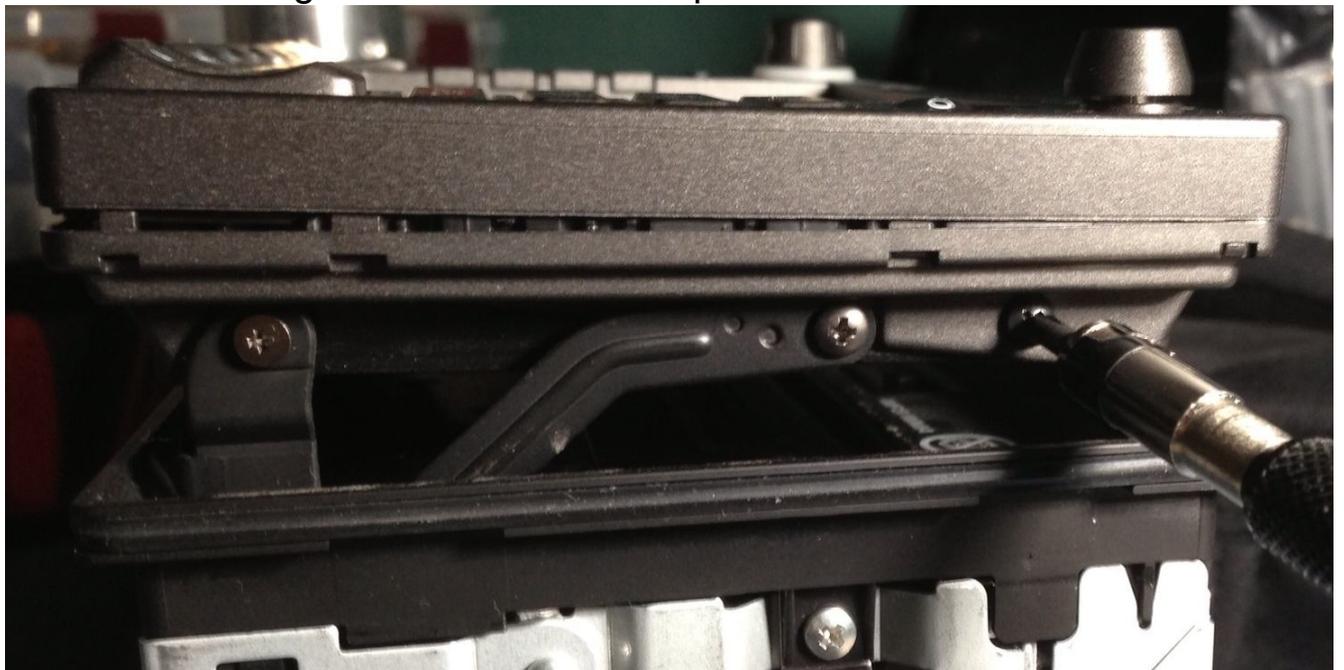
1 screw on the left side towards the top



1 screw on the top near the center



1 screw on the right side towards the top



To release the bezel from the display housing I used the thinnest guitar pick I had to release all the locking tabs. Work the guitar pick into the space between the front bezel and the display housing body. Then slide it all around the housing, as you do this the tabs should release the bezel from the display housing.



Use a piece of tape as shown to keep the front bezel from tipping too far forward. Now you should be able to tip the display forward against the bezel. Do not tip the bezel/display too far forward or you will put stress on the flat ribbon cable connected to the display and possibly pull the cable out of the display.



Next the joystick and volume/power control ribbon cables need to be disconnected:

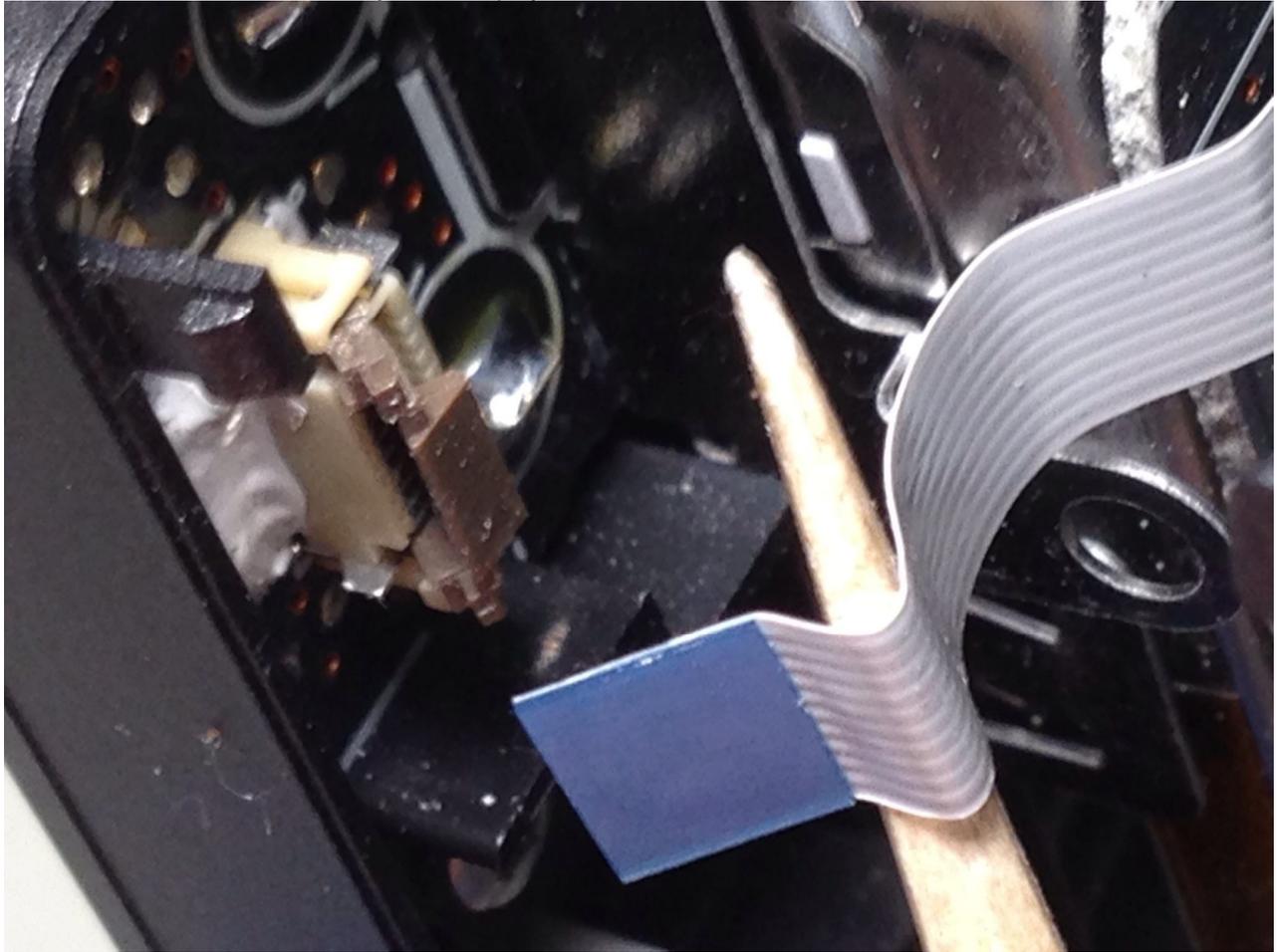
I used an orange stick to unlock the ribbon cable connector (Shown in locked position in this photo)



Joystick ribbon cable connector unlocked



Pull ribbon cable away from joystick connector

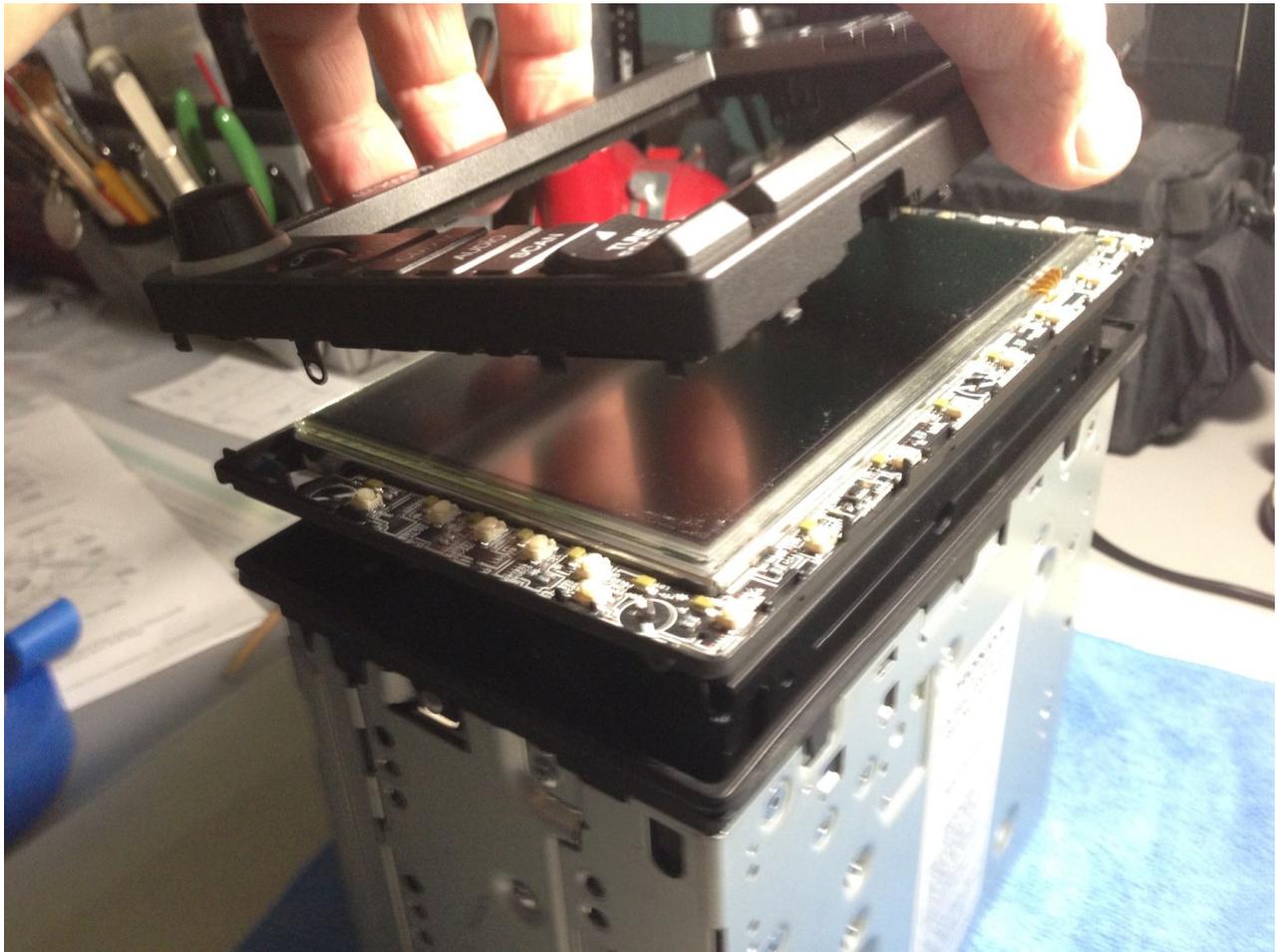


Use the same procedure to remove the ribbon cable from the volume/power control connector.

Now tip the display back against the display housing away from the bezel and turn the navigation unit on its back end (the end where all the connectors are). You will have to let the bezel rest against the display as you reposition the navigation unit, be careful you don't lock it back into the display housing.

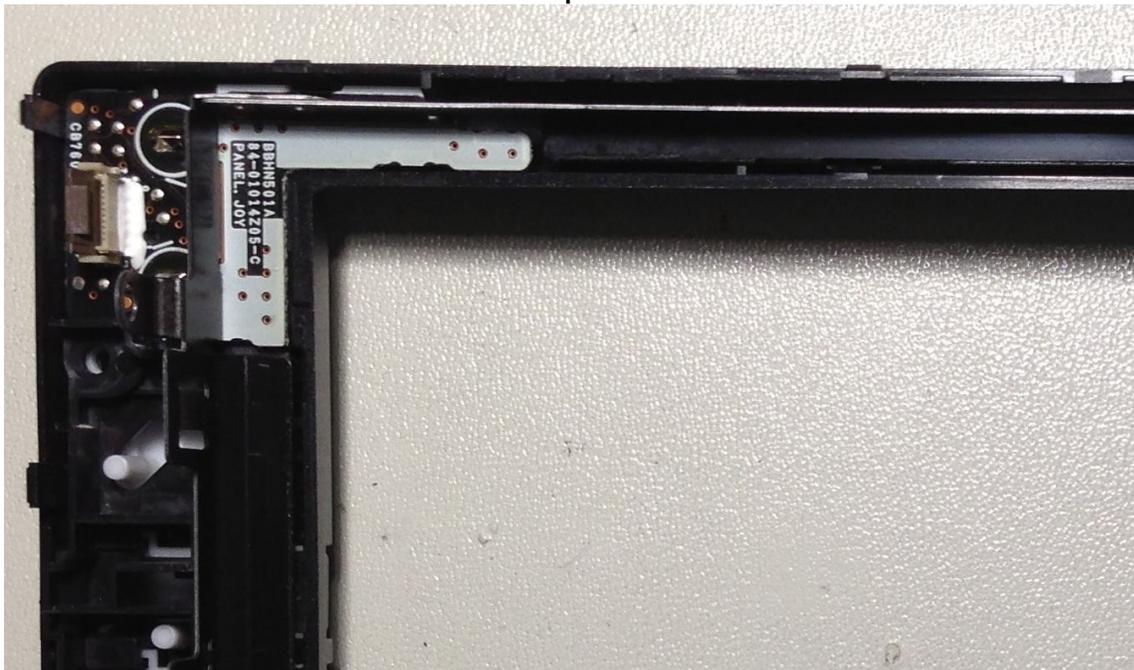
Make sure you have removed both the joystick and volume/power control ribbon cables. If so you will be able to lift the bezel from the display.

Leave the navigation unit on its back end until you are ready to reinstall the front bezel or the display will fall out of the unit!

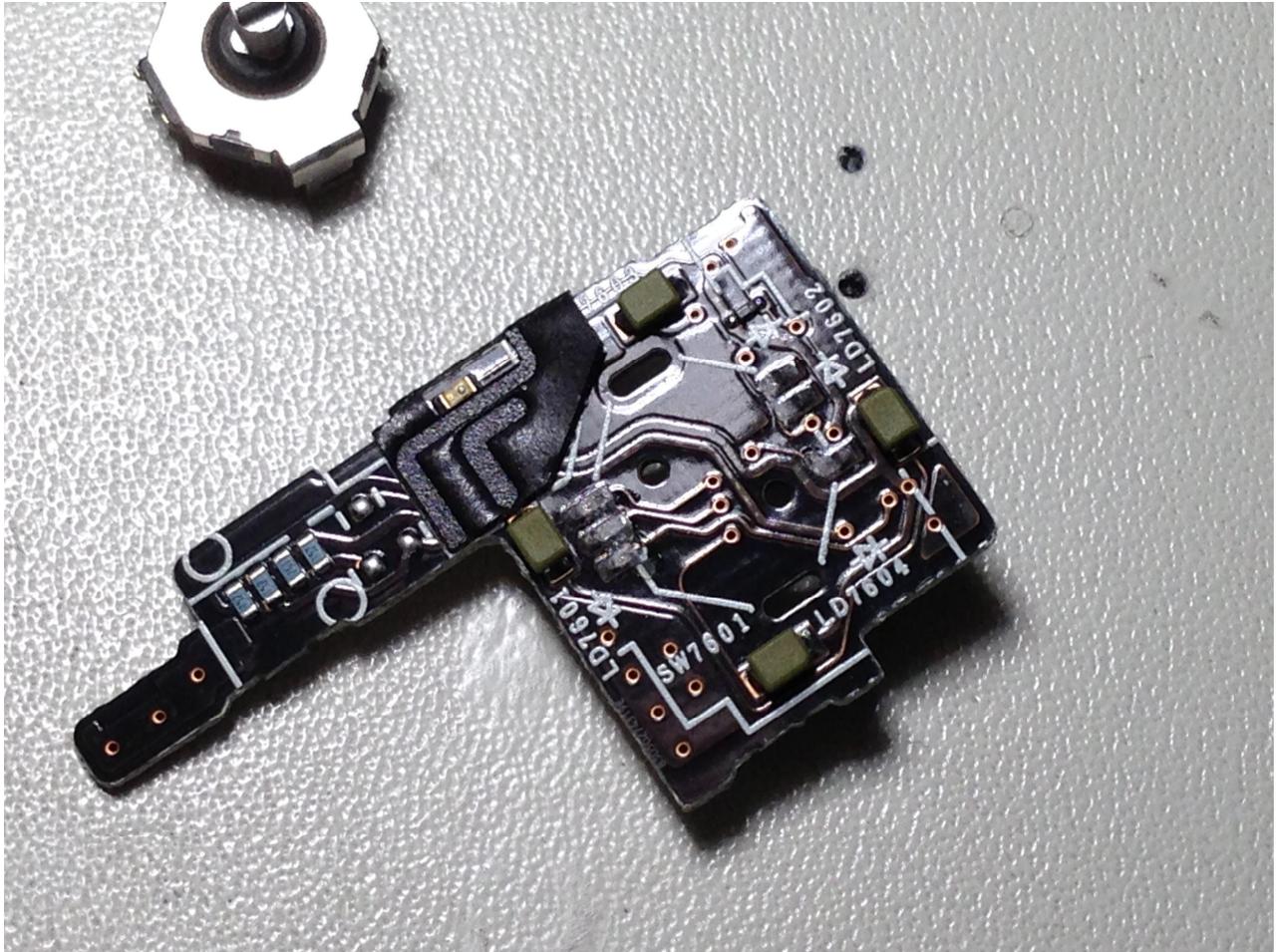


Before you start this step look things over real good. This will help when it's time to reinstall the joystick circuit board into the bezel. You need to get every thing completely snapped back into the correct position. If everything isn't seated all the way down you will have trouble reassembling the bezel to the display body.

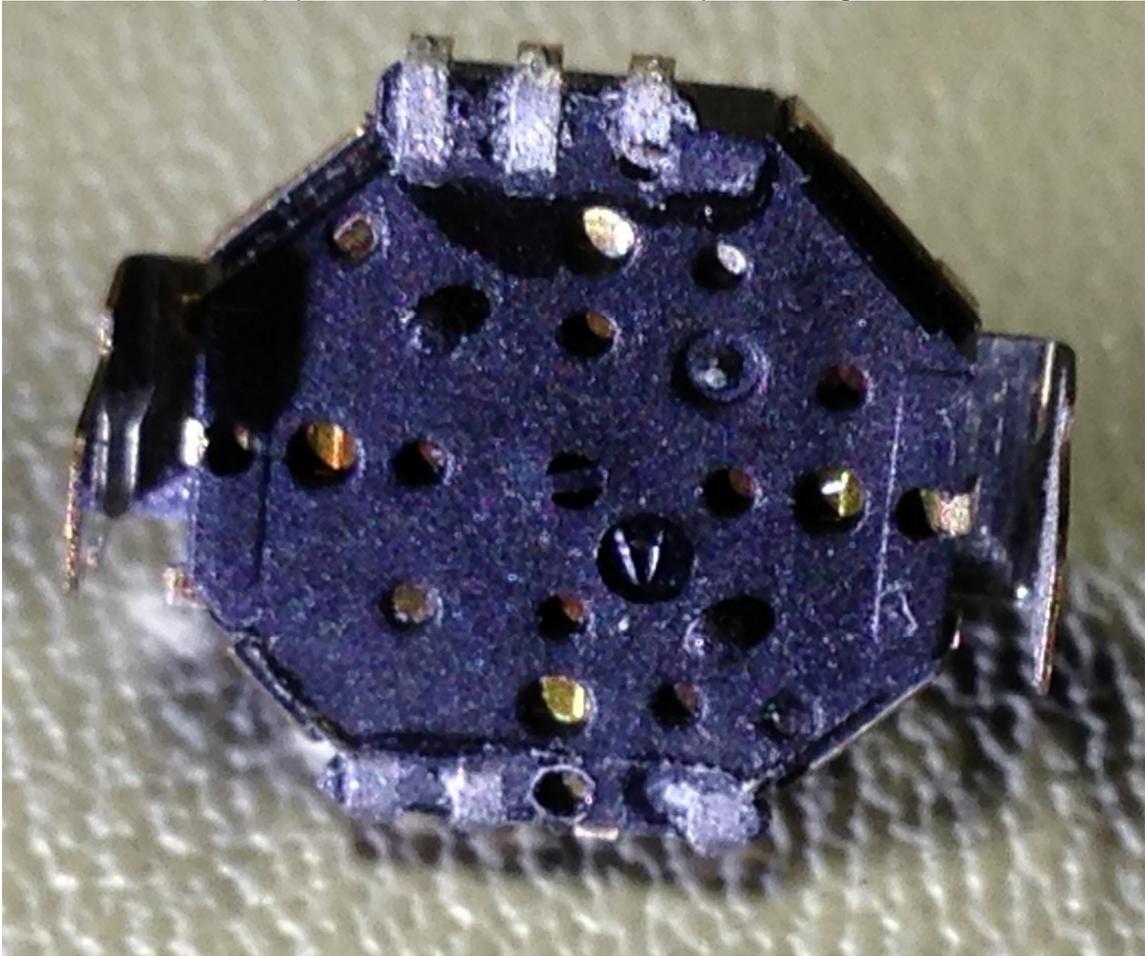
Remove the joystick knob by pulling it straight off the shaft. Remove the screw securing the joystick circuit board (it has been removed in this picture, you can see the hole near the left edge of the bezel below the circuit board where the screw was removed. There is a little bit of white plastic showing inside the left side of the hole.) To free the joystick circuit board, you need to lift the metal frame that crosses on top of the circuit board. I couldn't see exactly how it was held in there but I think it was hooked under small plastic fingers. I just flexed the metal frame one way or the other and I was able to lift it enough to slip the circuit board out. I may have used the guitar pick in the space between the metal frame and the inside of the bezel. Just be careful don't tweak things too much and you will get it out. I didn't need to take the metal frame completely out, I only needed to free it enough in both directions to allow me to slip the circuit board out.



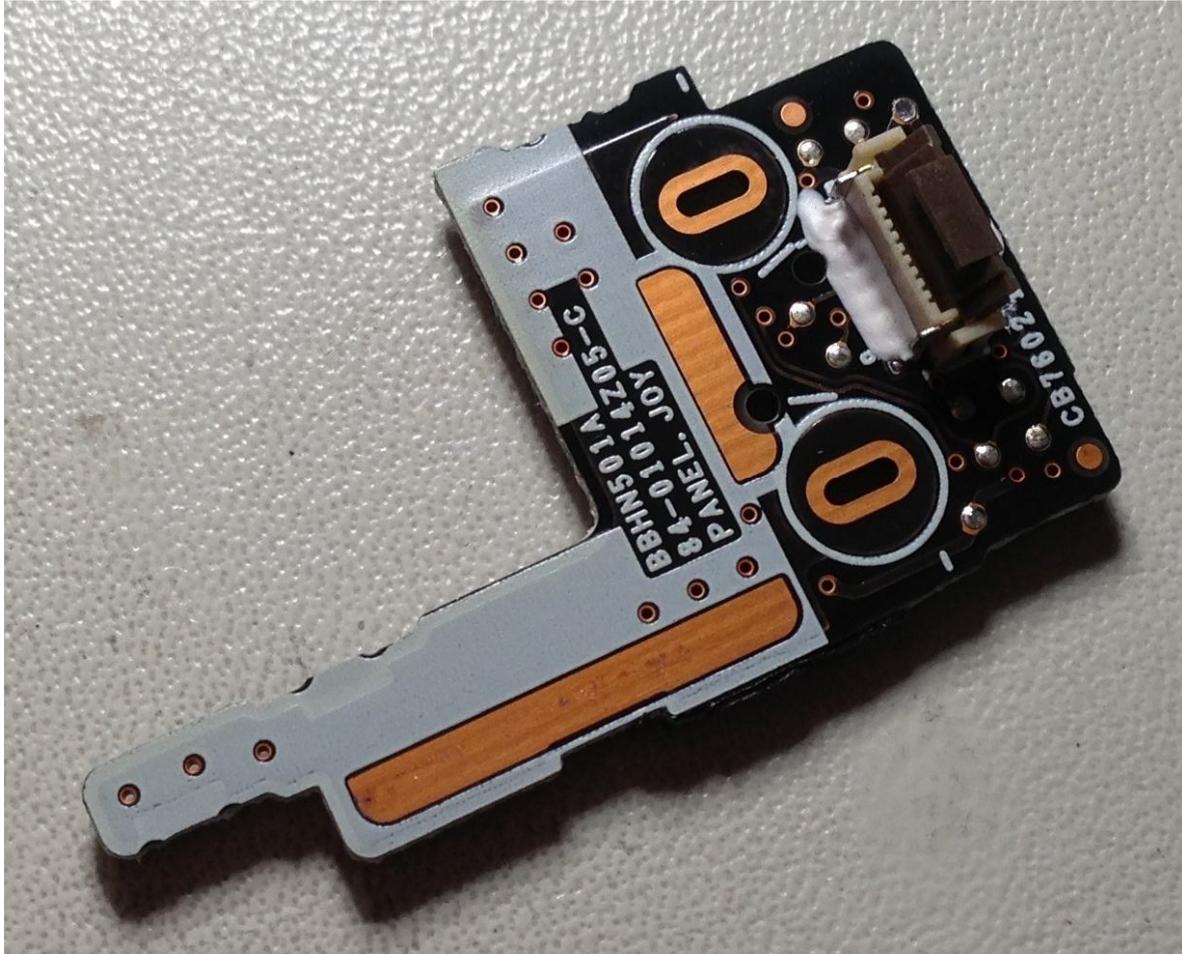
After removing the joystick circuit board, I was able to just lift the joystick off the board. All 6 solder connections had fractured and the metal tabs were not soldered on the back of the board! Yours may still be partially soldered, no need to remove it, just re-solder it in place. Make sure you also solder the metal tabs to the pads on the other side of the board!



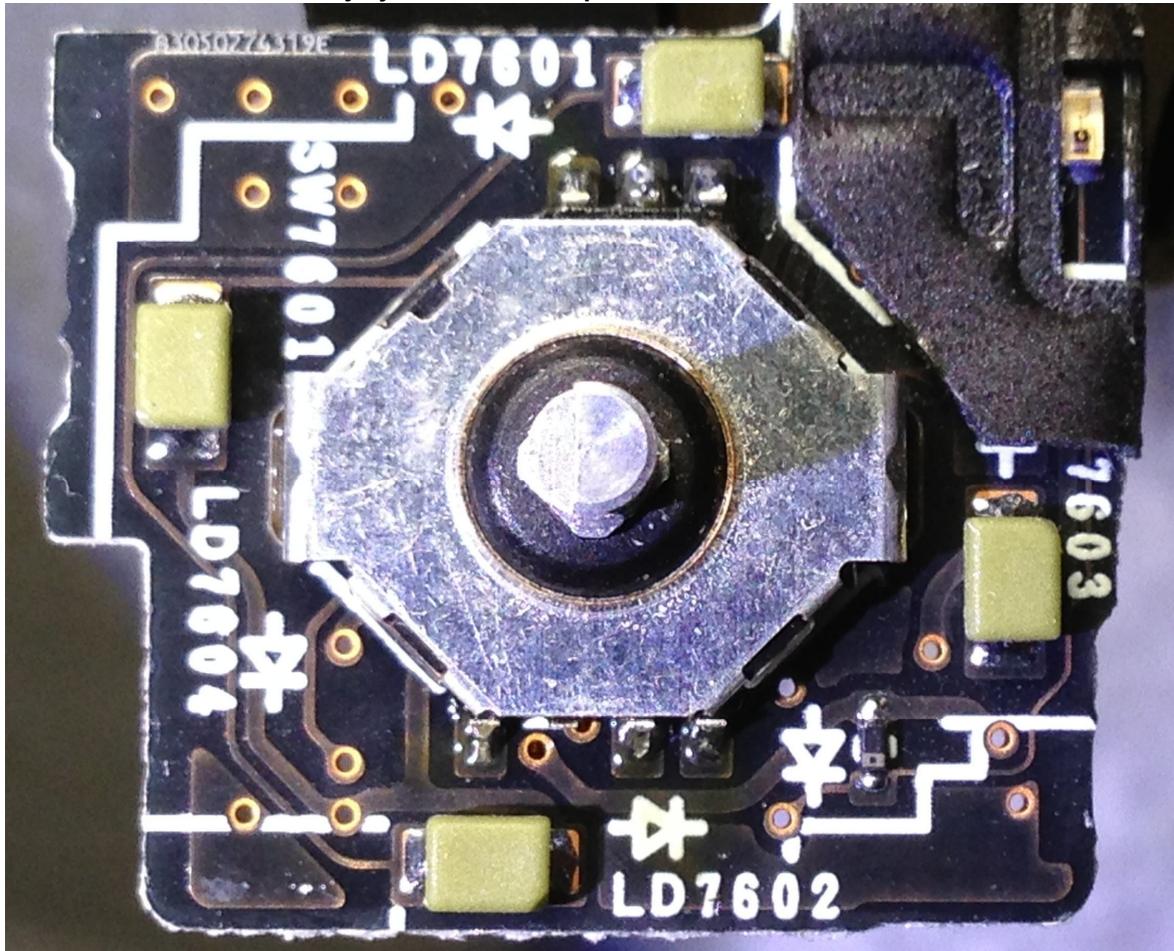
Bottom side of joy stick. Note the 6 frosty looking solder connections.



Note the oval solder pads, these should have been soldered to the metal tabs on the joystick that stick through this side of the circuit board. Solder these after properly aligning and soldering the 6 connections on the other side of the board. This will give the joystick the needed support and prevent future problems!



Top of circuit board, after re-soldering 6 joystick connections. Note the connections on one side are spaced differently! Make sure the 6 connections on the joystick line up with the ones on the board!



After Soldering the metal support tabs on the bottom of the board

