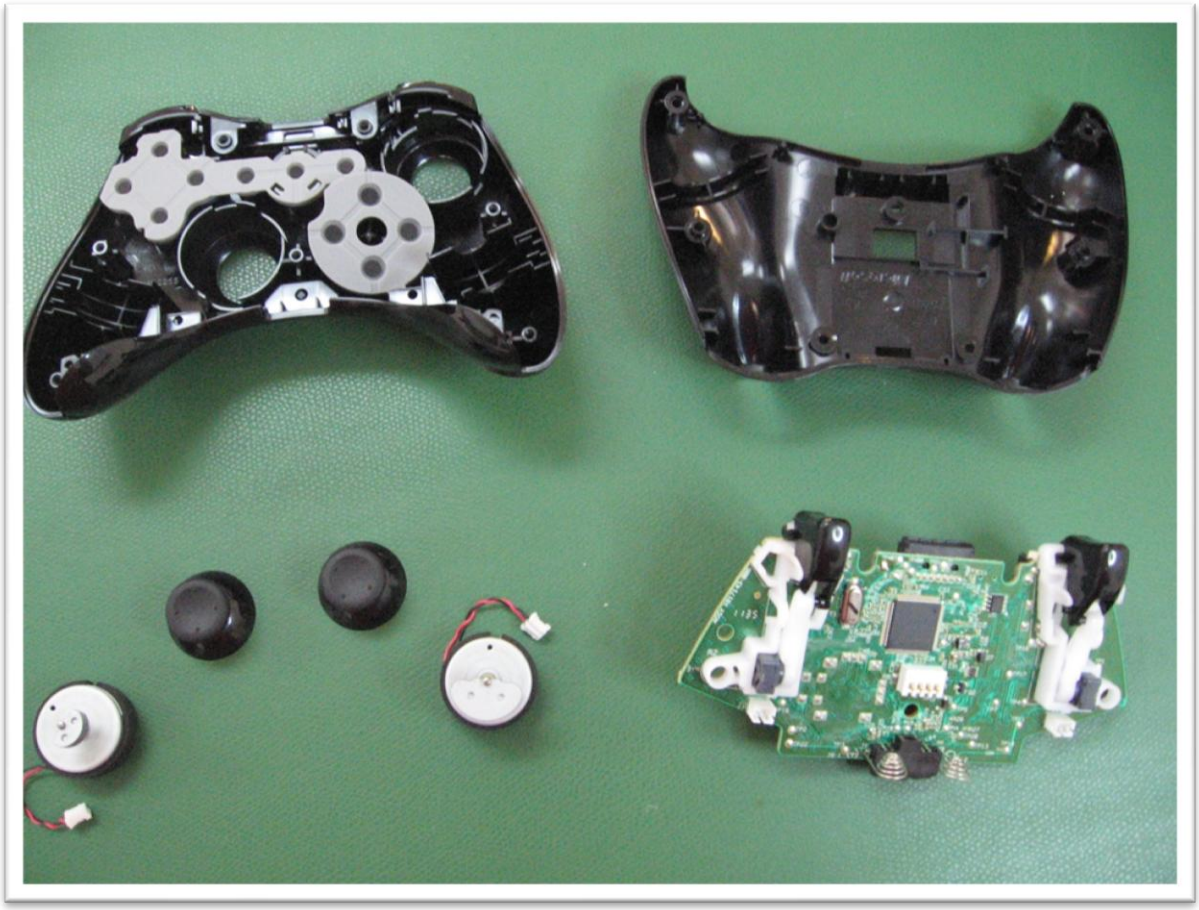
XBOX 360 RAGNAROK MODCHIP INSTALLATION INSTRUCTIONS (CG2)

List of equipment needed to do the job:

- Ragnarok Modchip for CG2, including mod switch and optional USB programming jack
- XBOX 360 controller with a “CG2” circuit board
- Soldering iron and solder (cleaning sponge helps)
- 30 AWG (American wire gauge) wire or similar
- Wire strippers (capable of stripping and cutting above wire)
- Power drill – be sure to include eye protection
- 9/64” or 5/32” drill bit for mod switch
- 1/4" drill bit for optional USB programming jack
- Hot glue gun, or other type of glue suitable for plastic
- Torx T8 “star” or “tamper-resistant” screwdriver
- Electrical tape
- Xacto knife or sandpaper
- Tweezers

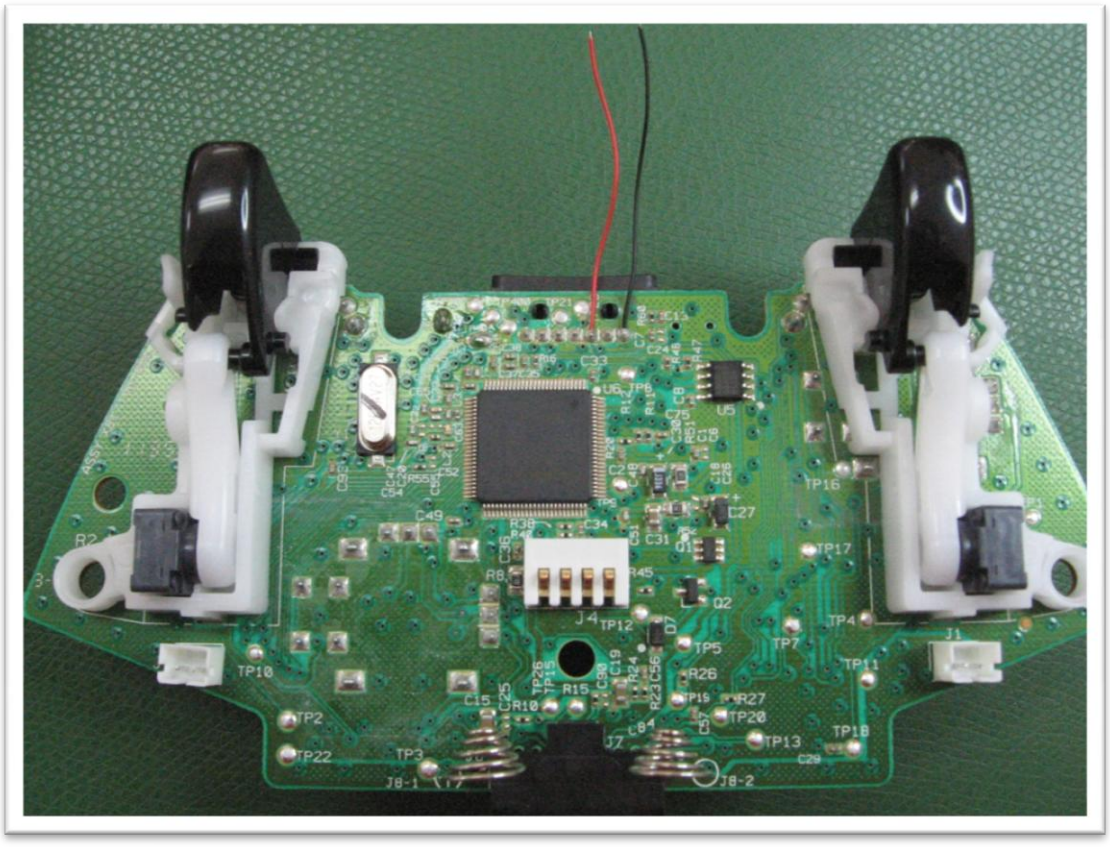
Start by removing all seven screws from the back of the controller using the special screwdriver.

Remove the back cover from the controller, and then remove the circuit board. Keeping the top of the controller down towards the table will help keep the buttons from falling out.

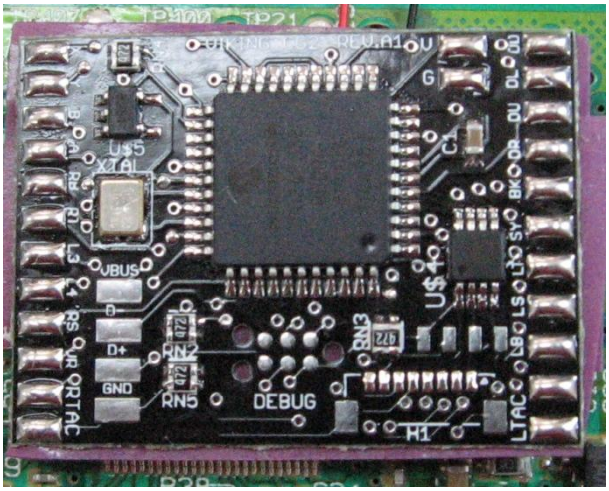


Prepare the modchip by putting tape on the back of the modchip. This will ensure that the modchip does not “short circuit” with the controller’s circuit board. You can also use a small second piece of tape made into a “loop” to help the modchip stick to the circuit board.

Strip two wires for the Power and Ground wires (V and G connections) and attach them to the circuit board.

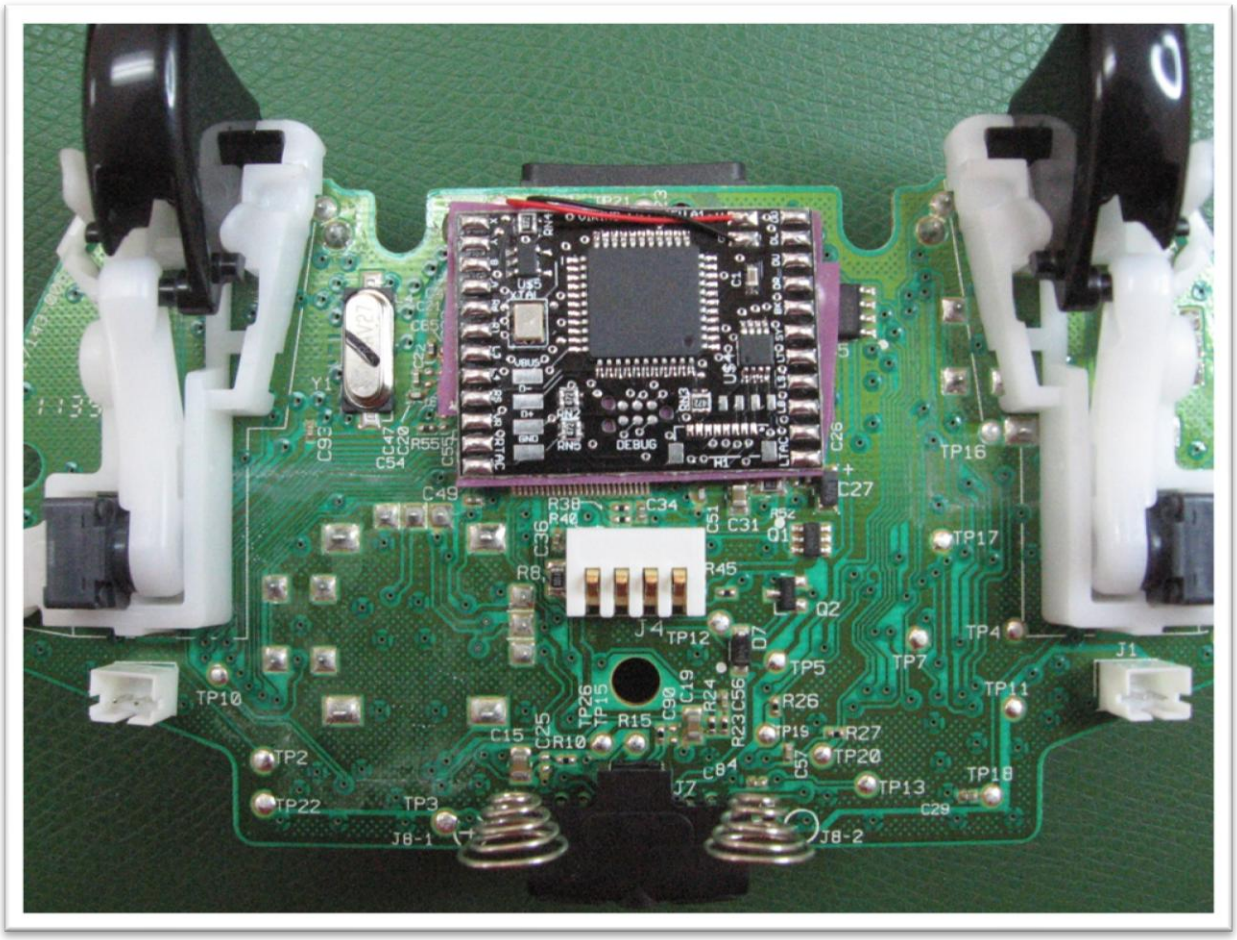


Prepare the rest of the modchip by “tinning” the solderpads we will use. You can “tin” a pad by applying a little solder to the pad.

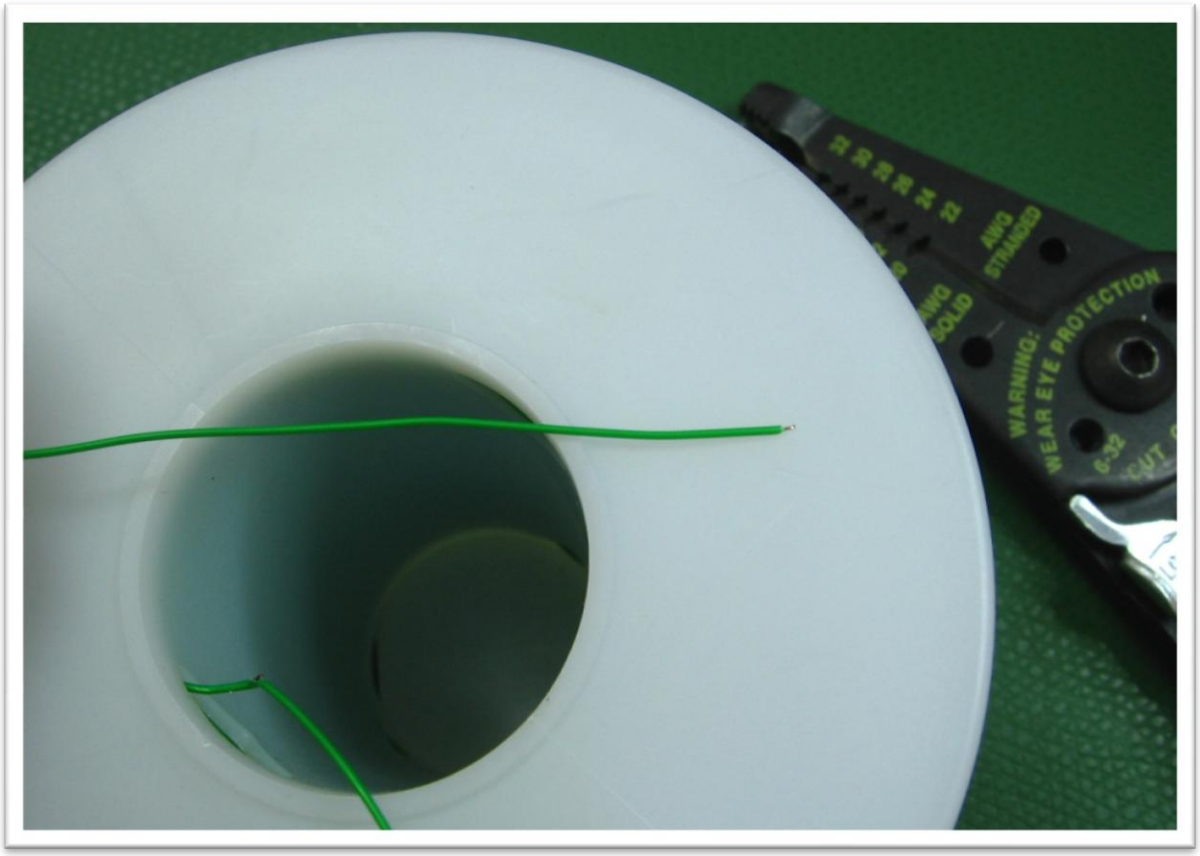


Modchip with tinned solderpads/wirepads

Now stick the modchip to the circuit board and attach the other end of the V and G wires, routing the wires close against the board:



We are now ready to begin installing the remaining wires. Use the wire strippers to strip and cut each wire. Only a very small amount of wire needs to be stripped to get the job done, as shown in the photo below:

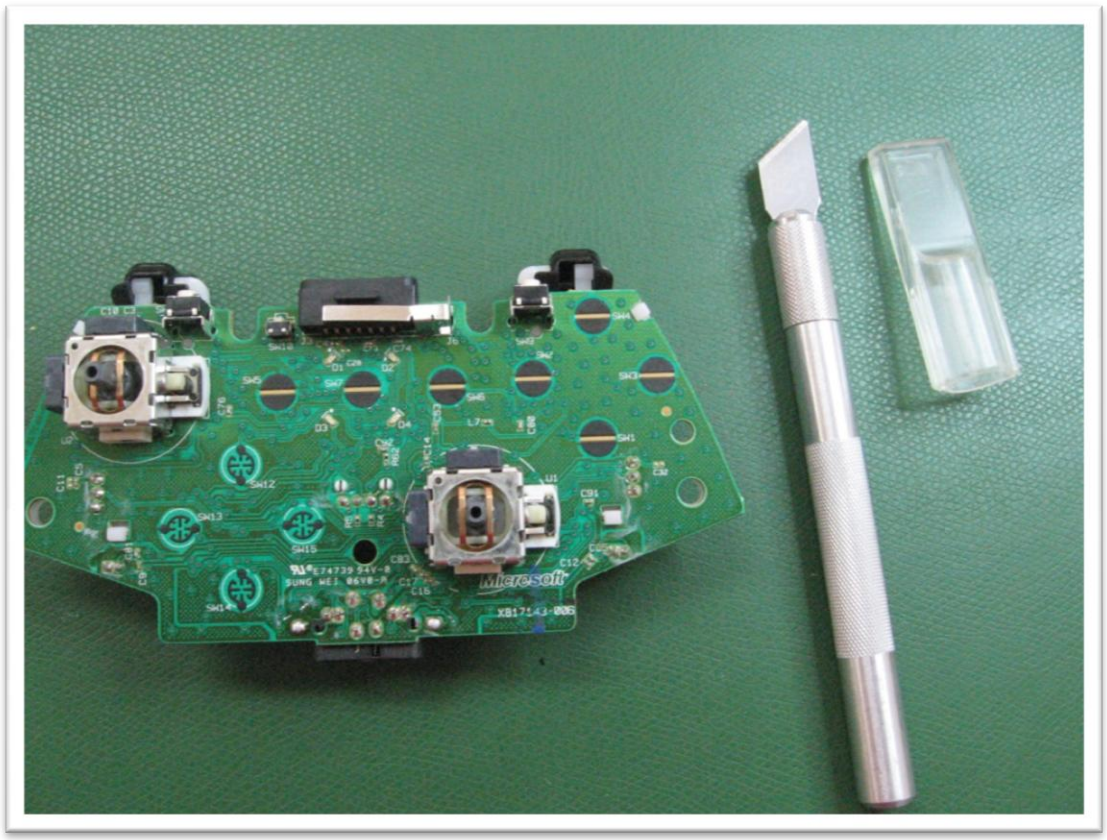


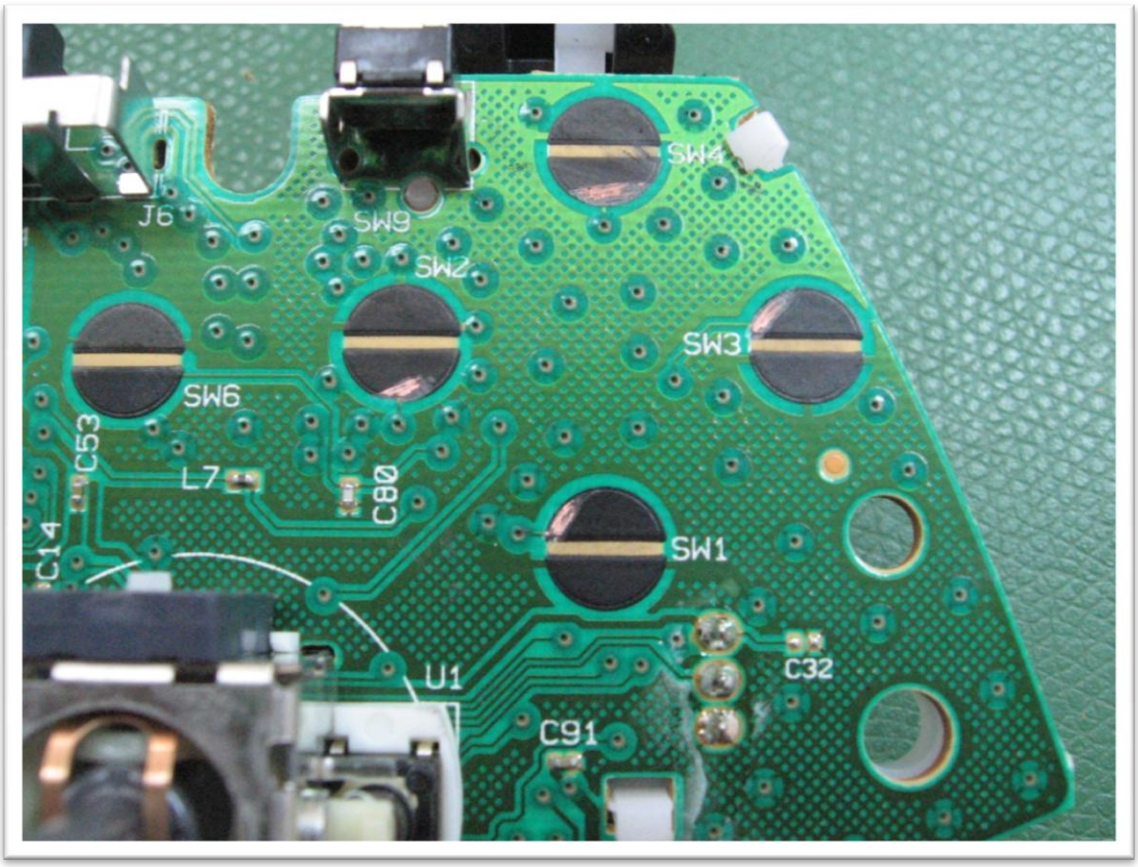
Pay close attention to how wires are routed

Following the solder connection diagrams on the next two pages, install a wire from the modchip to each connection point.

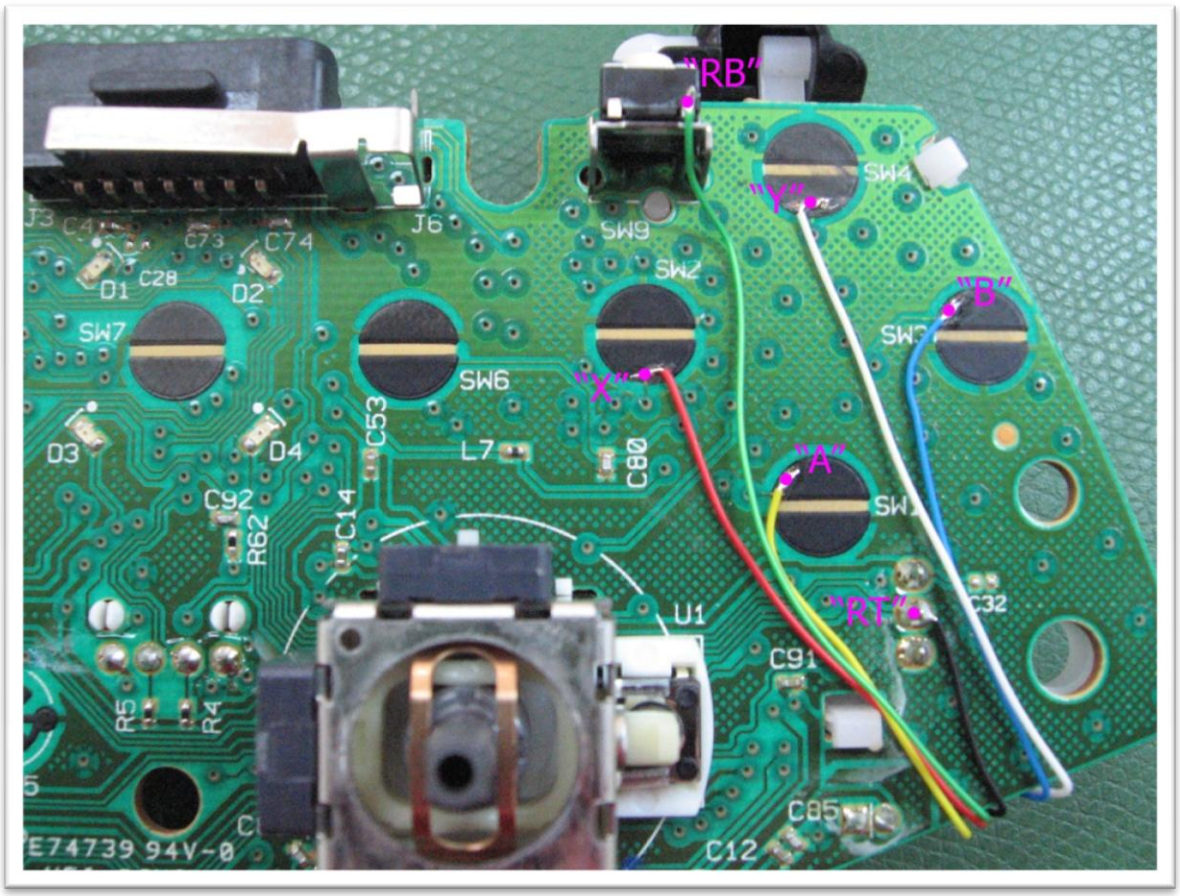
There are some places the wires can go, and there are other places the wires CAN'T go or else they will probably get pinched when you close the shell up. Pinched wires can make your mod stop working. Be sure to check the fit of your shell and of the wires frequently.

Use an exacto knife or sandpaper to expose a little bit of the X, Y, B and A button pads.

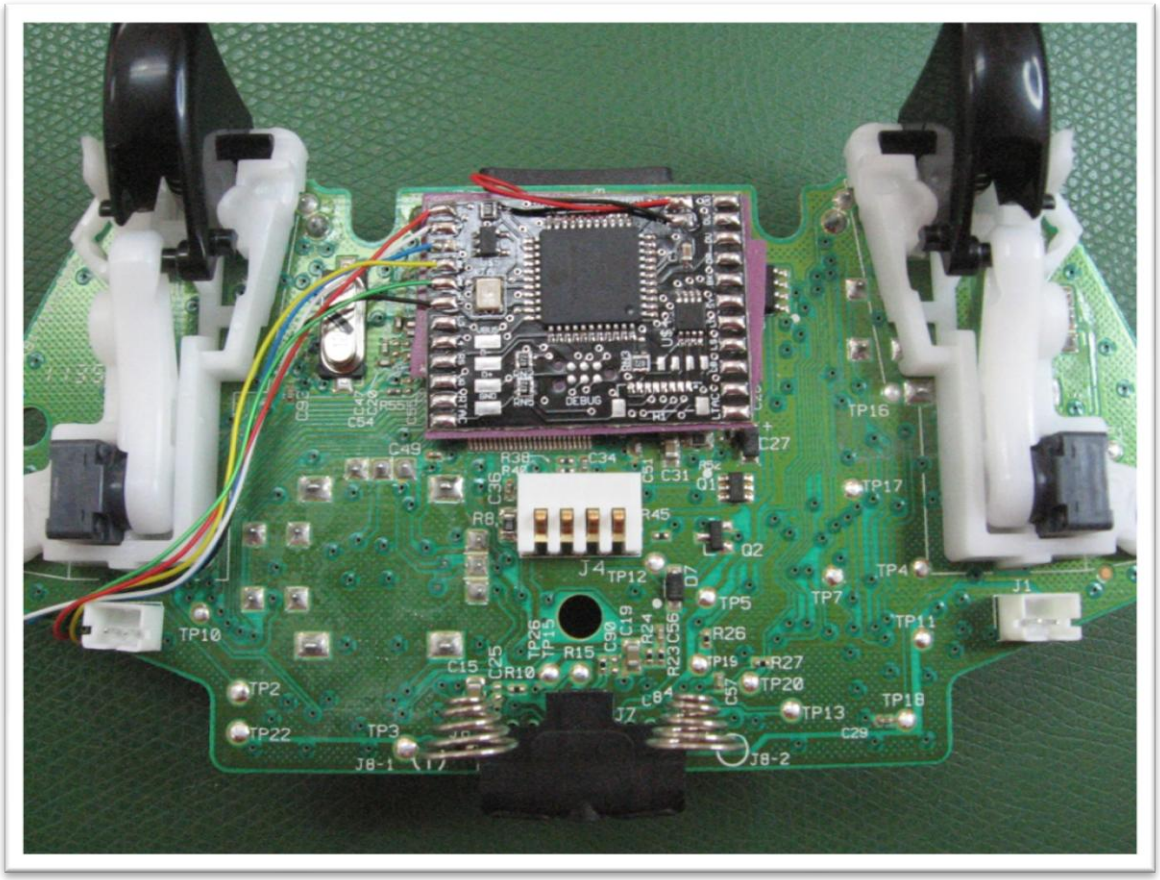




Next, connect wires to the X, Y, B, A, Right Bumper, and Right Trigger points on the circuit board:



And route these wires neatly around the board as shown and connect them to the modchip:



In case you were wondering, here are all of the abbreviations for the wirepads on the modchip (in order):

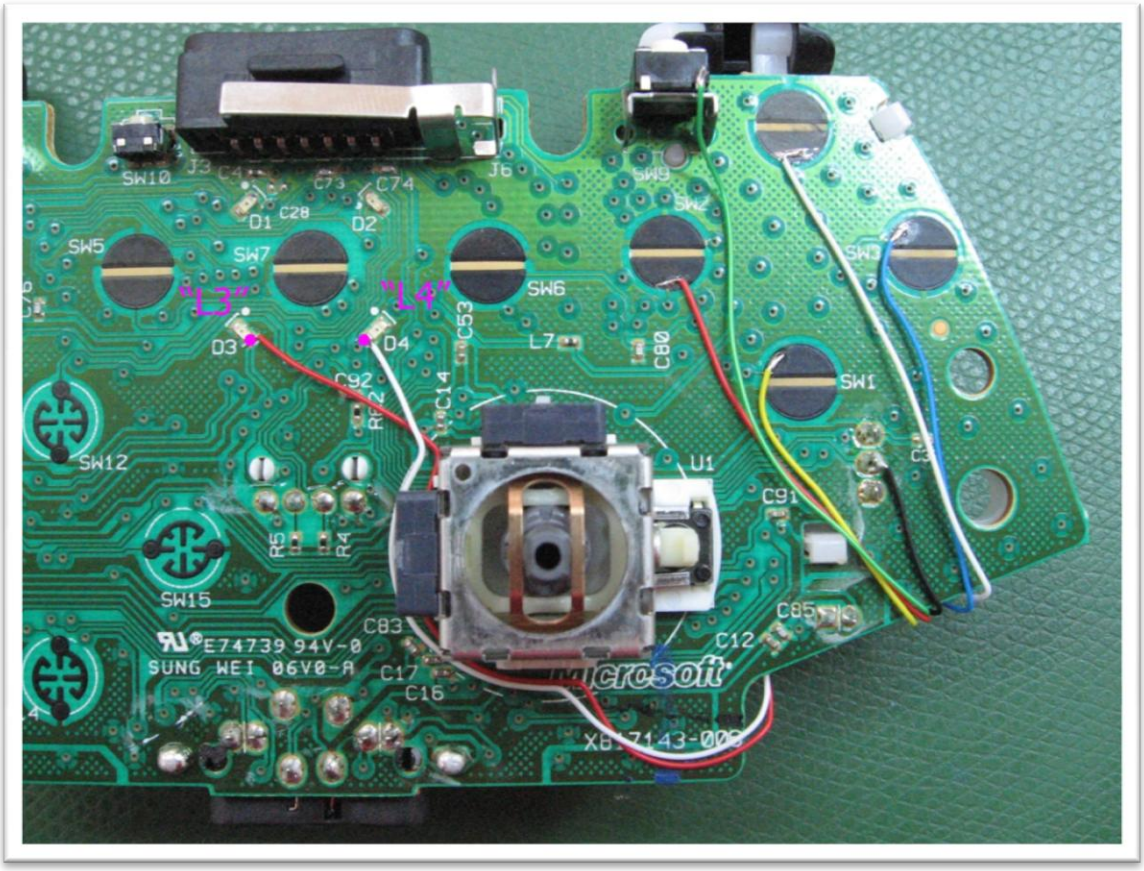
Left side of the modchip:

- “X” – Button X
- “Y” – Button Y
- “B” – Button B
- “A” – Button A
- “RB” – Right Bumper
- “RT” – Right Trigger
- “L3” – Player 3 LED
- “L4” – Player 4 LED
- “RS” – Right Stick Button
- “VR” – A special Voltage Reference
- “RTAC” (two wirepads) – (these two pads are not used for anything)

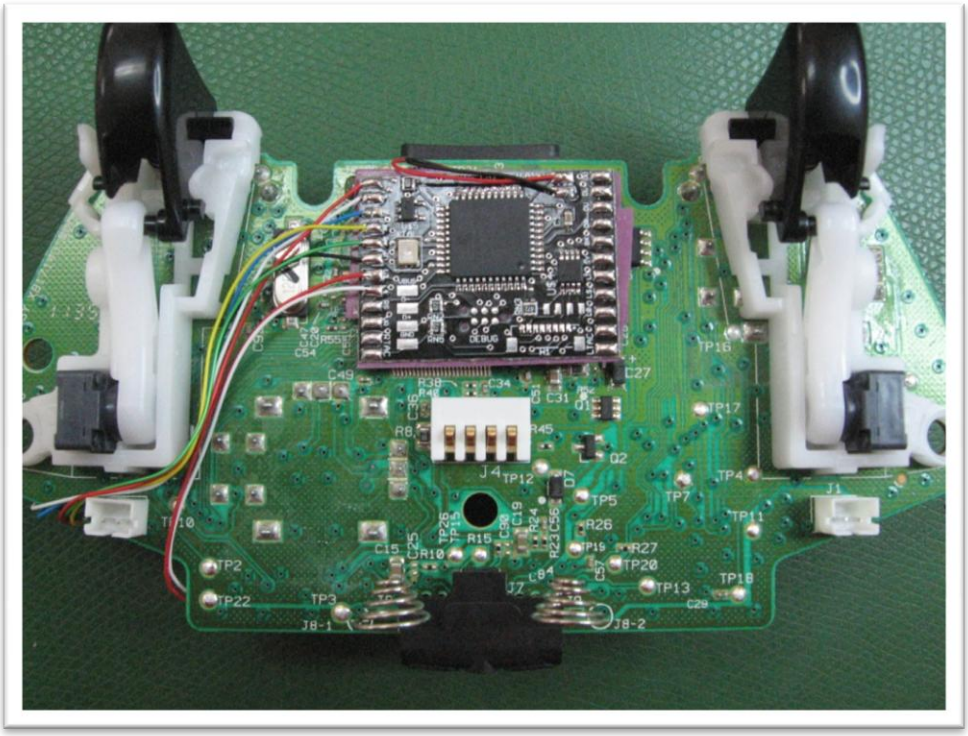
Right side of the modchip:

- “V” – Voltage(power)
- “G” - Ground
- “DD” – D-pad Down
- “DL” – D-pad Left
- “DU” – D-pad Up
- “DR” – D-pad Right
- “BK” – Back Button
- “SY” – Sync Button
- “LT” – Left Trigger
- “LS” – Left Stick Button
- “LB” – Left Bumper
- “LTAC” (two wirepads) – Left Tactile Swtich

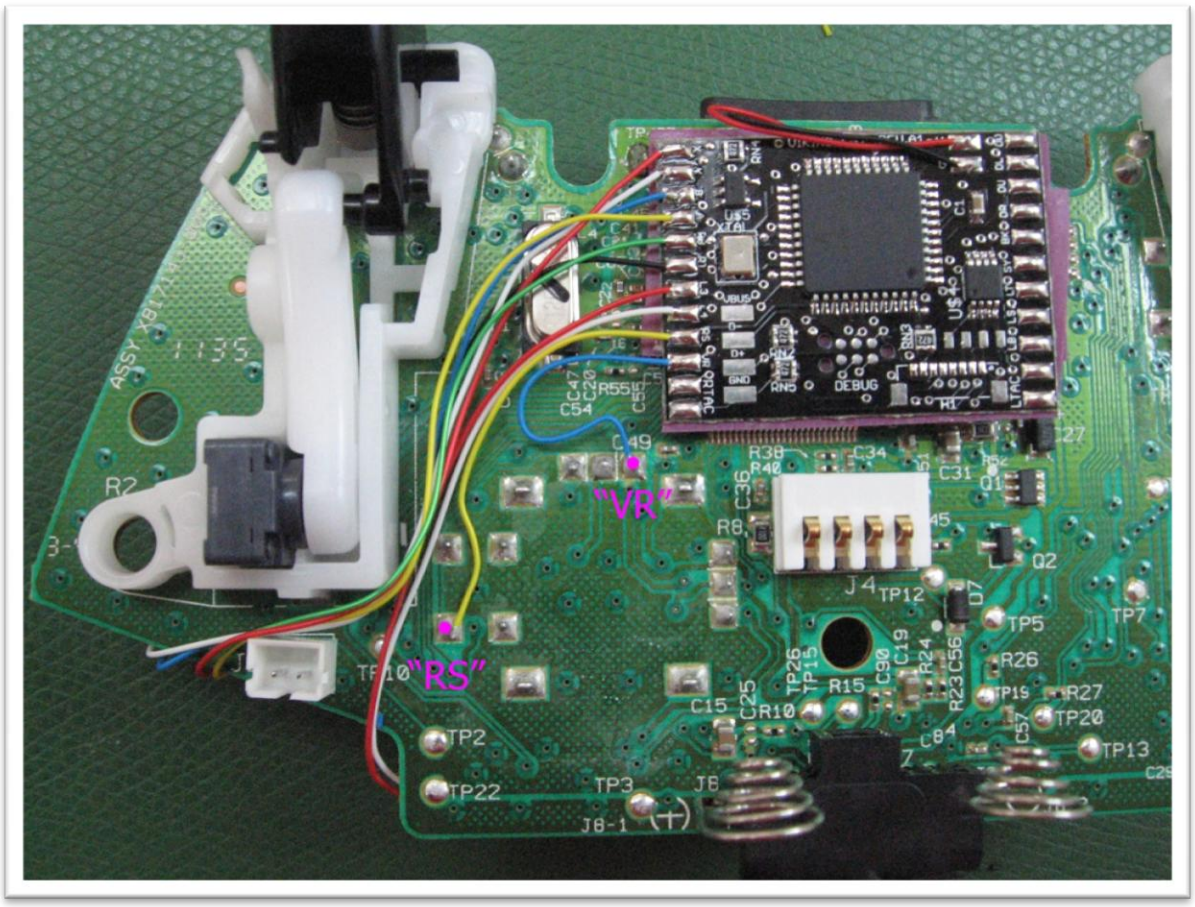
Next, attach wires to the Player 3 LED and the Player 4 LED as shown. Again, pay close to attention to how the wires have been routed.



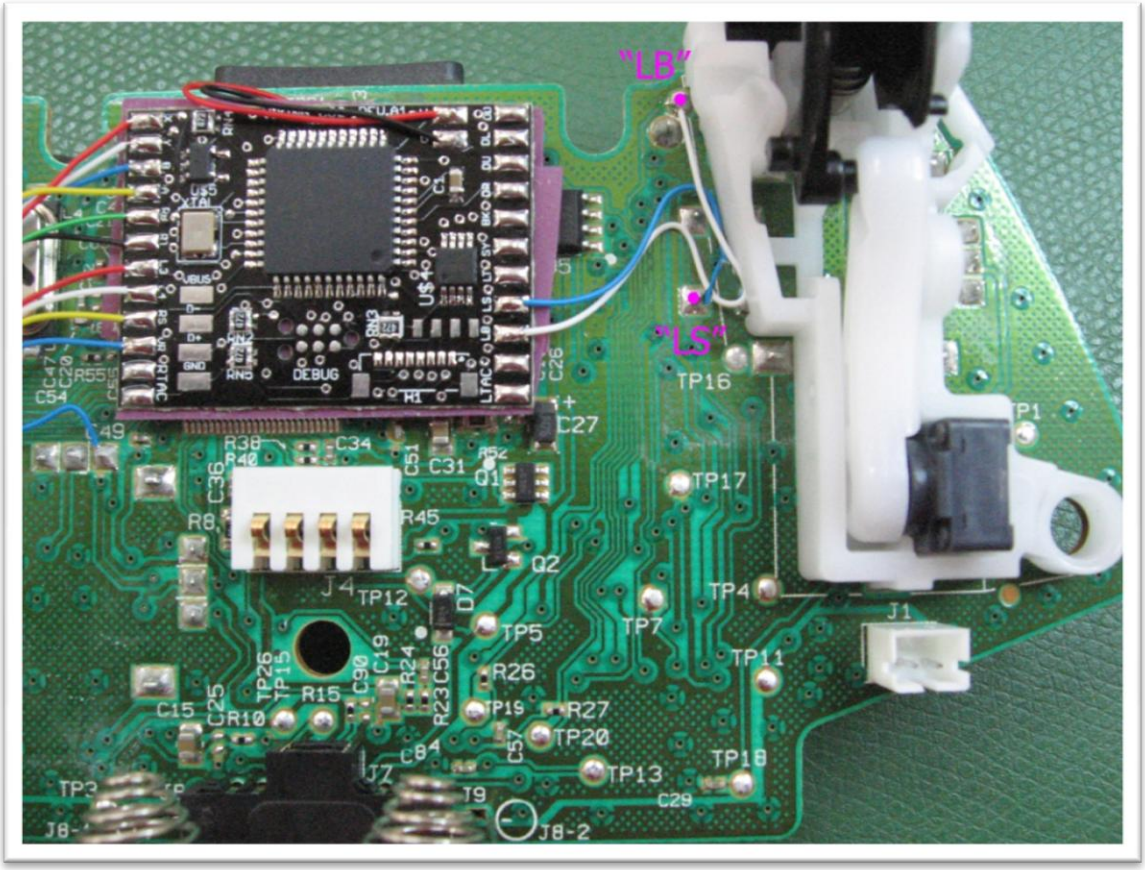
Player 3 LED is connected to the “L3” wirepad on the modchip. Player 4 LED is connected to the “L4” wirepad on the modchip.



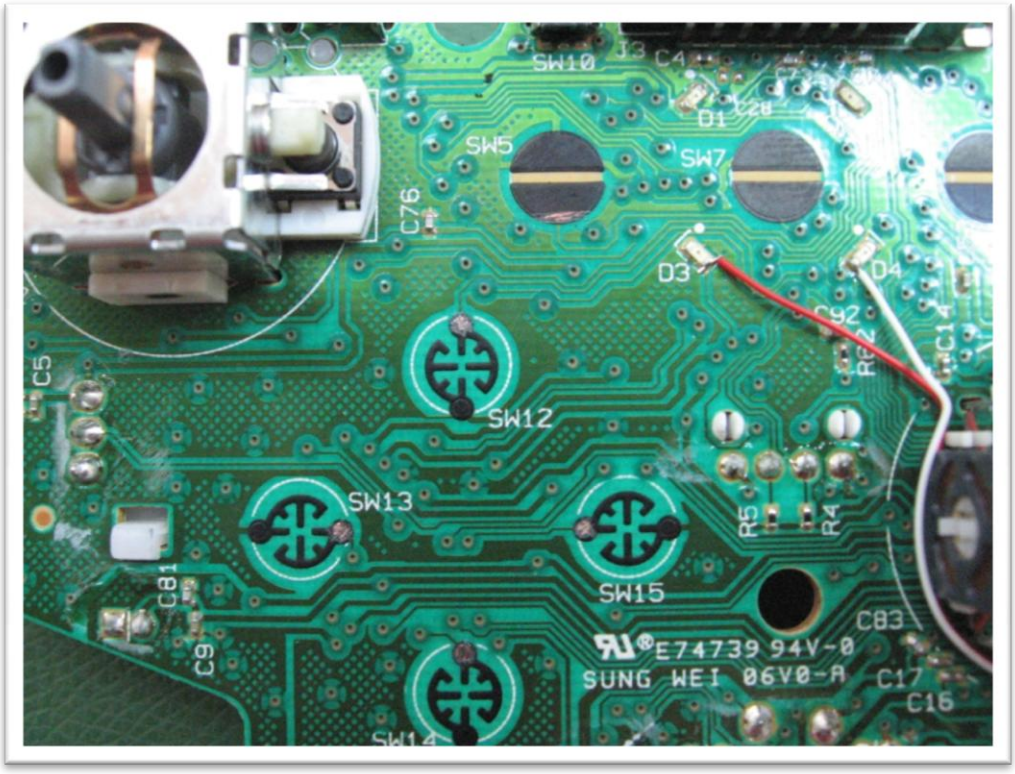
Next, we can install wires to the “RS” Right Stick and “VR” Voltage Reference wires:



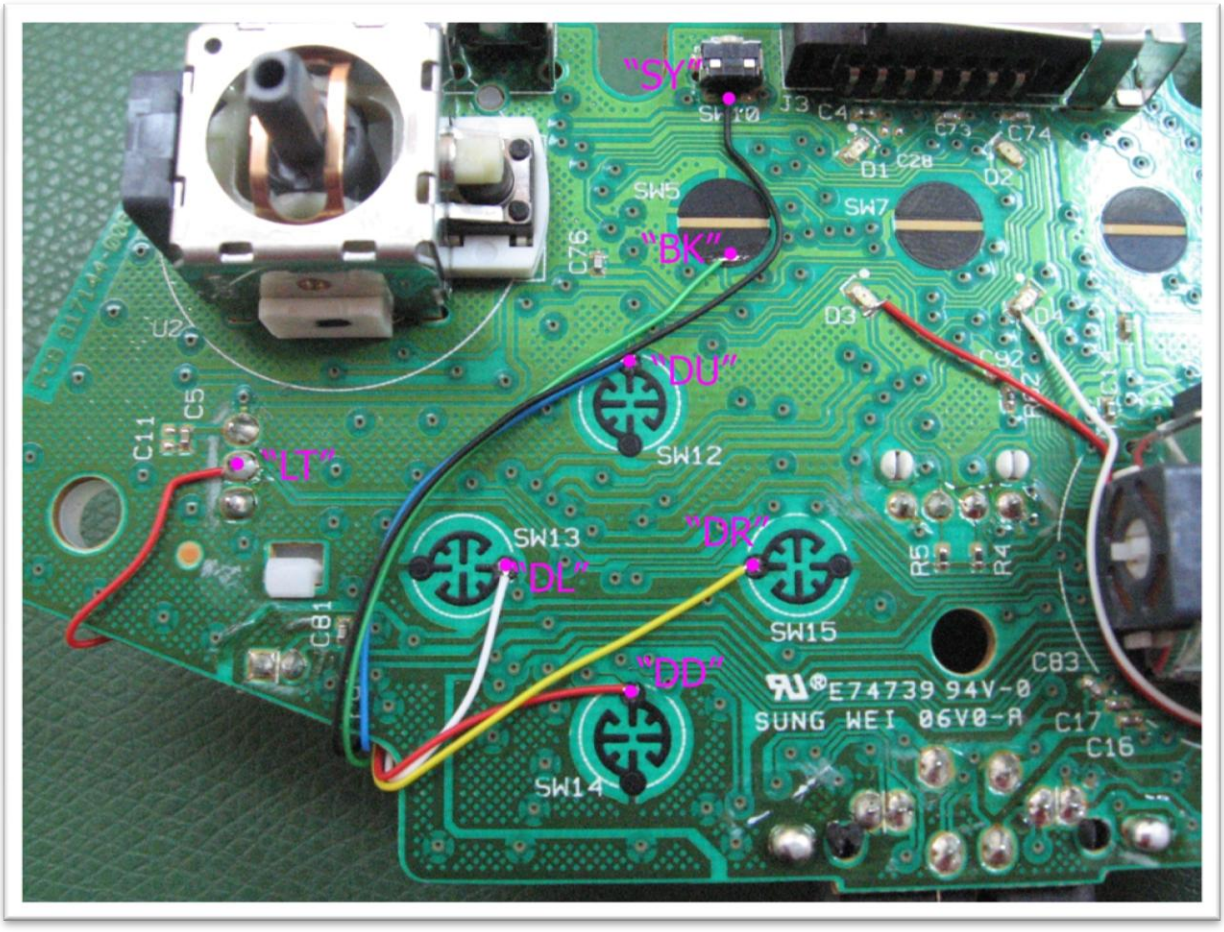
And the “LS” and “LB” wires:



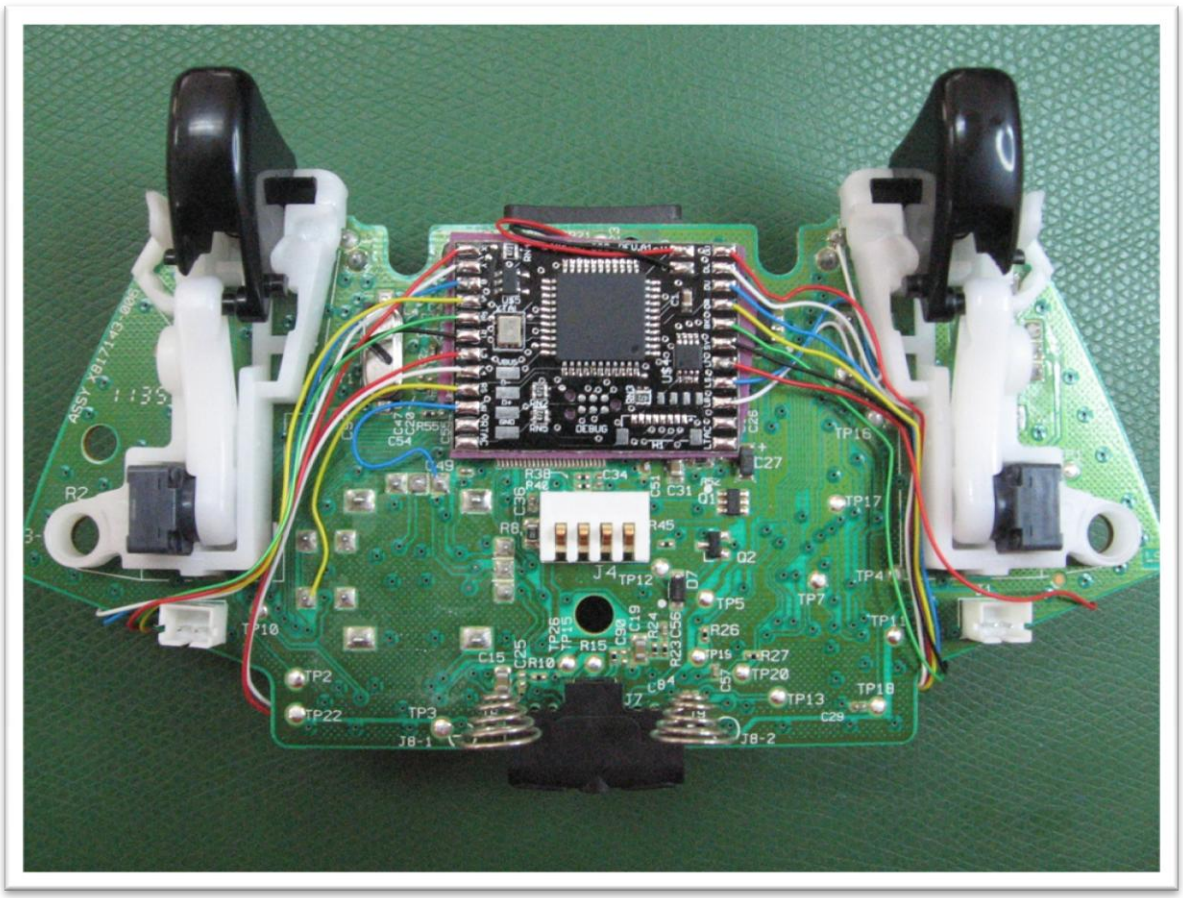
Let’s go ahead and prepare the D-pad up, D-pad down, D-pad left, D-pad right, and Back button using the exacto knife, the same way that we prepared the X, Y, B and A buttons:



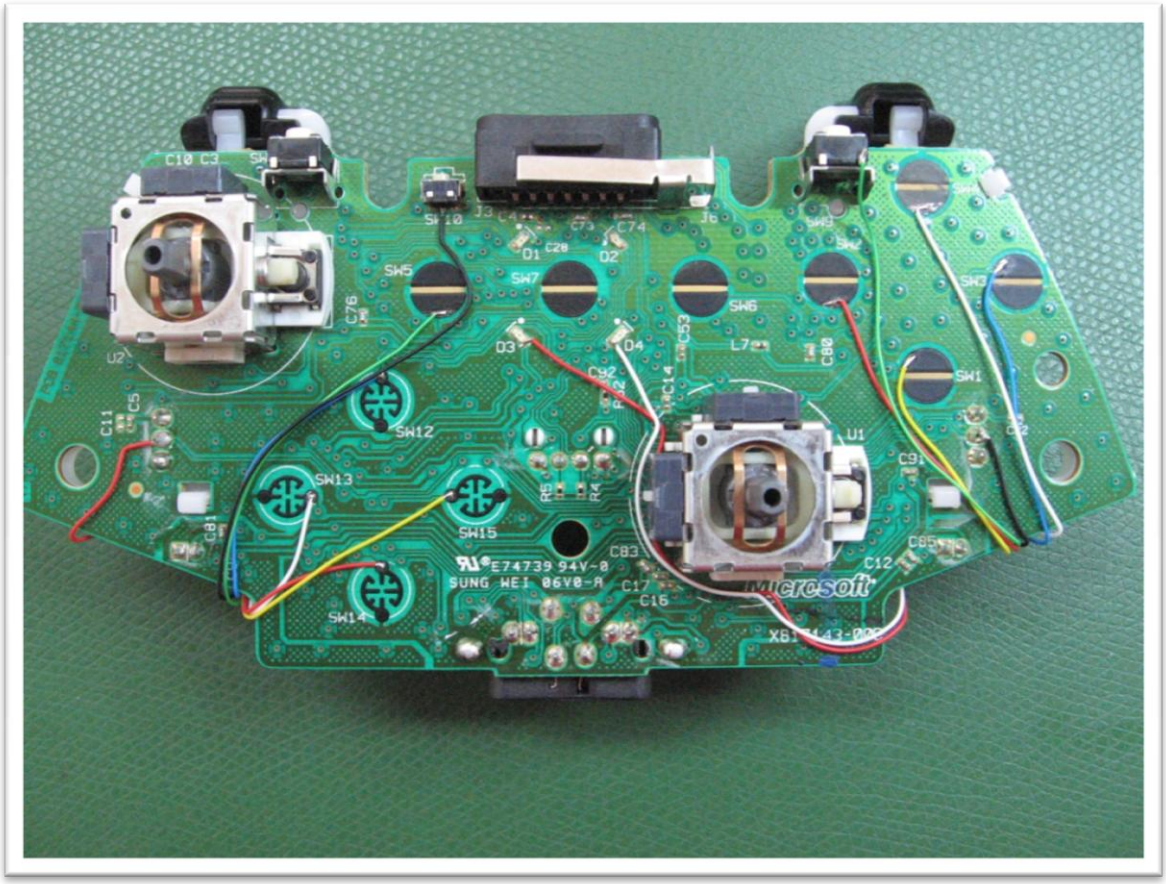
Then connect wires to the D-pads, the back button, the sync button, and the left trigger:



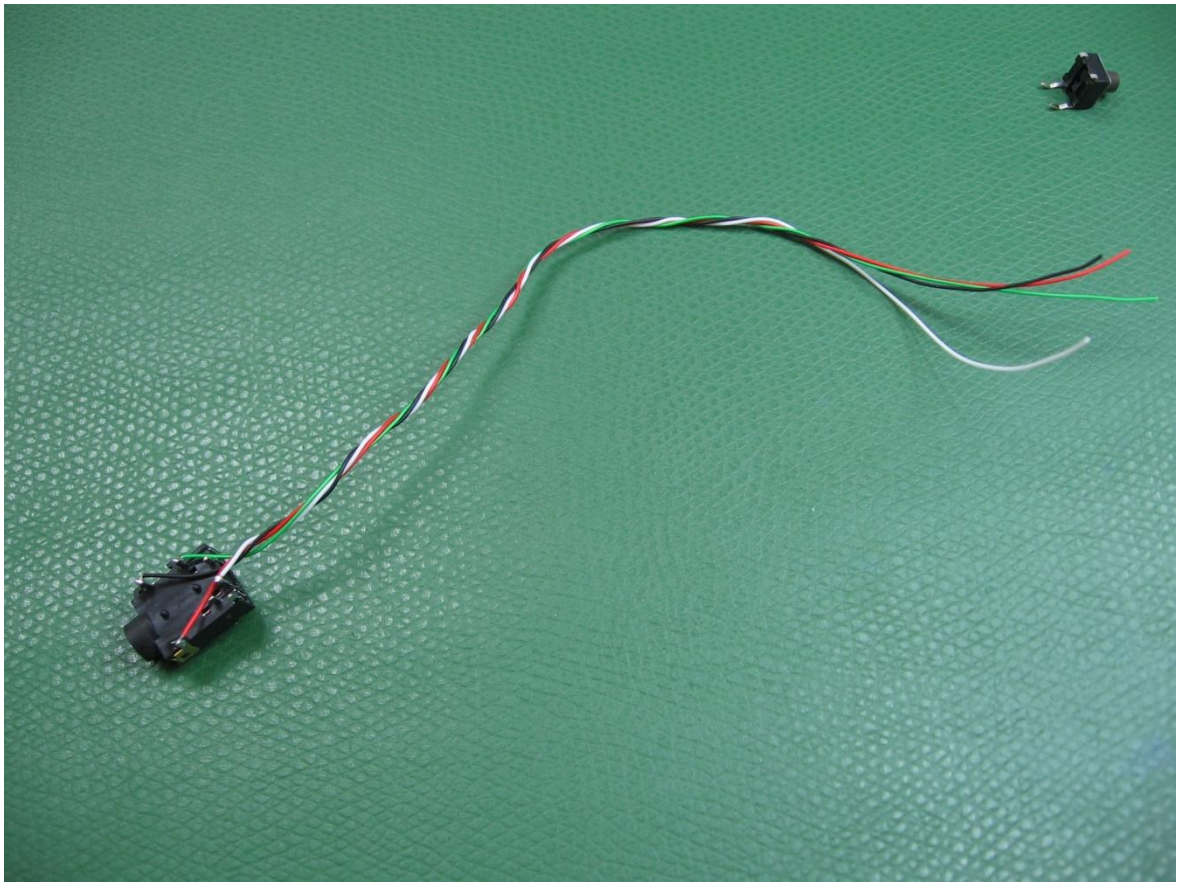
Route the wires neatly around the board and attach them to the modchip:



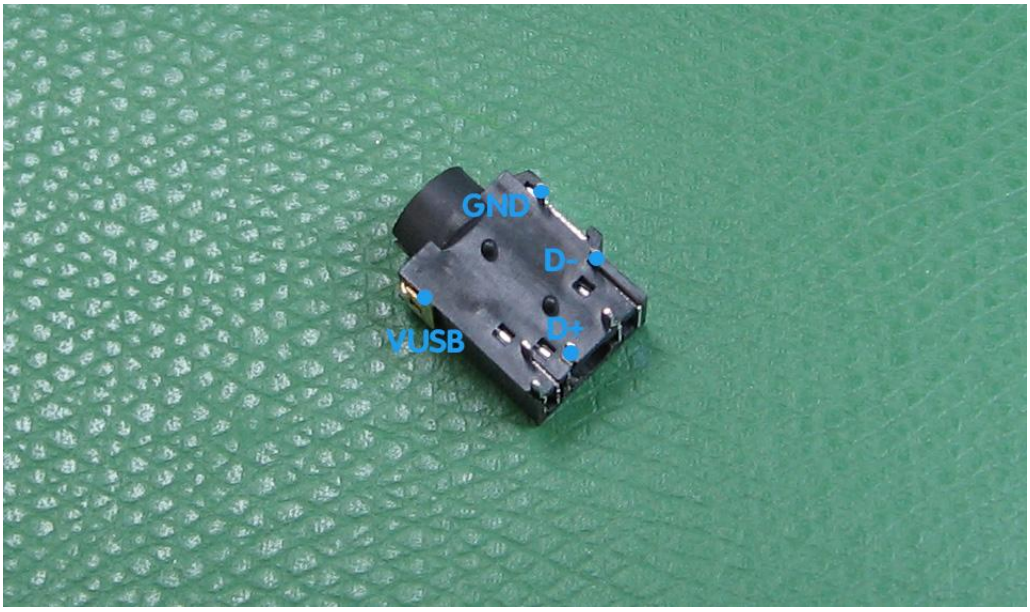
Here is a view of the entire front side of the installation:



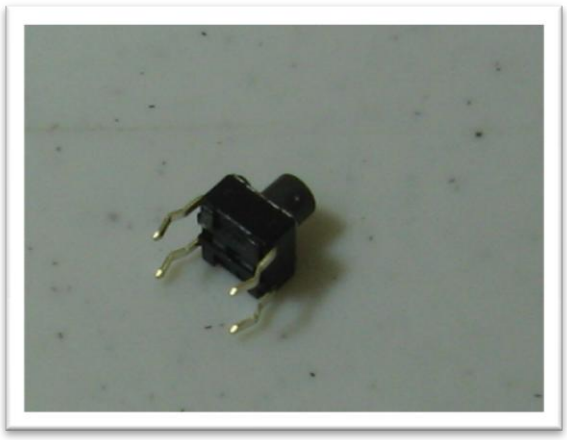
If you will be installing the optional 3.5mm USB programming jack, prepare the jack with a long 4-wire twisted harness as shown. You can create this harness by simply twisting together 4 of the small 30-gauge wires:



The four connections on the optional 3.5mm programming jack are as follows:



Prepare the mod switch for installation. Cut any two legs that are on the SAME SIDE of the switch. Only the two legs are needed. See the example below:



Once the mod switch and optional USB programming jack are ready, it's time to drill a hole in the back plastic shell. Use a standard drill, a 9/64" (or 5/32") drill bit for the mod switch, and a 1/4" drill bit for the USB programming jack.

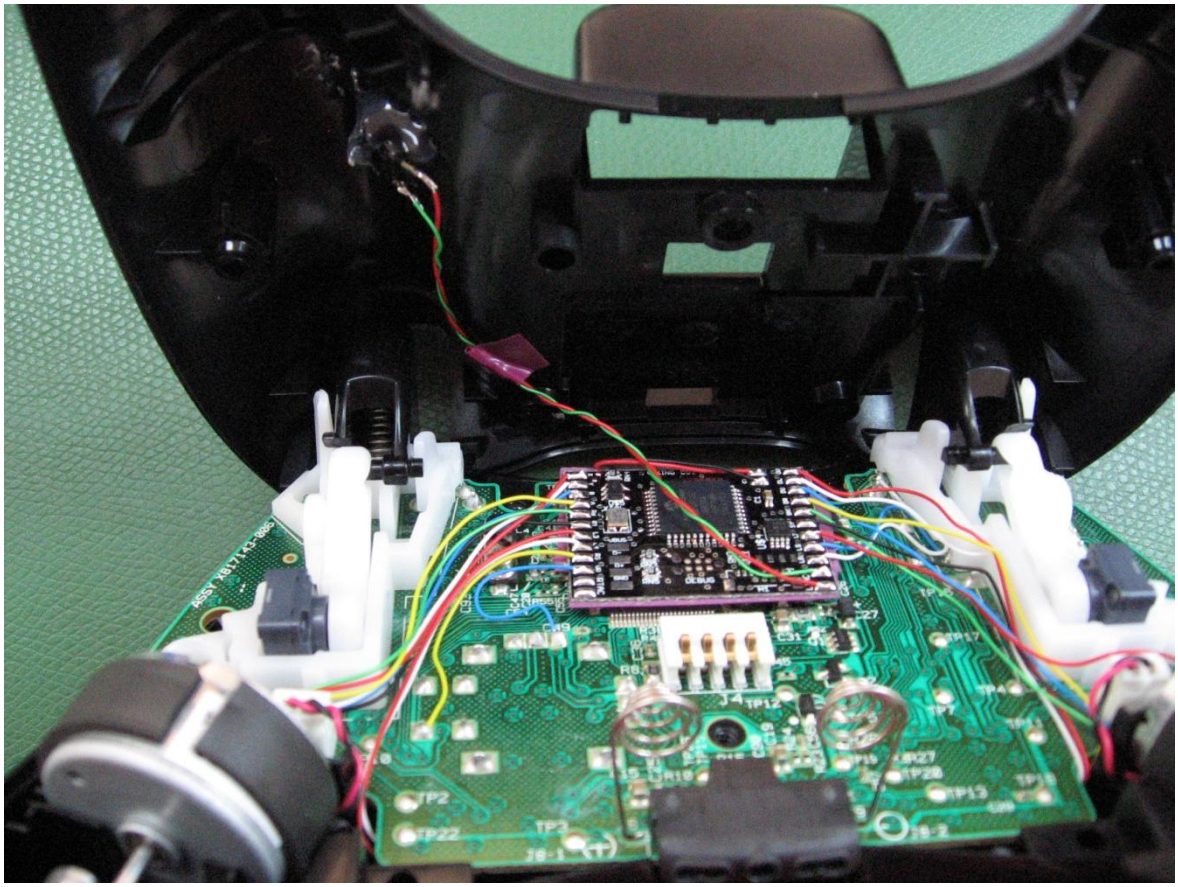
WARNING: IT'S ALWAYS A GOOD IDEA TO WEAR EYE PROTECTION WHEN USING POWER TOOLS

Two approximate locations for the mod switch and optional 3.5mm USB programming jack are shown in silver pen. "Test fit" each location prior to fully gluing the button and jack into place:

Using hot glue, attach the mod switch to the shell. Hot glue is recommended since it can be removed easily if needed. Other types of epoxy may not be so easy to remove. Push the two silver metal legs downwards to they are nearly flat against the shell as shown. This will ensure the legs of the switch don't short-circuit with any other components.

Test the switch to make sure it is operating to your satisfaction. If it is jamming or getting stuck, remove the hot glue and switch, drill the hole a little larger than 9/64", and then install the switch again.

You may use the same hot glue to attach the optional USB programming jack. It is recommended that you just use a small amount of hot glue to hold the USB programming jack in place, and then try assembling the controller to "Test fit" the USB programming jack. Adjust the position of the USB programming jack as needed to keep from interfering with the position of the rumble motors or the XBOX360 gamepad circuit board.



Once you have the mod switch and optional jack installed, route two long wires from the "LTAC" solder pads on the modchip to each leg of your mod switch. Run four long wires from the VUSB, D+, D- and GND pads to the optional USB programming jack that you assembled in an earlier step.

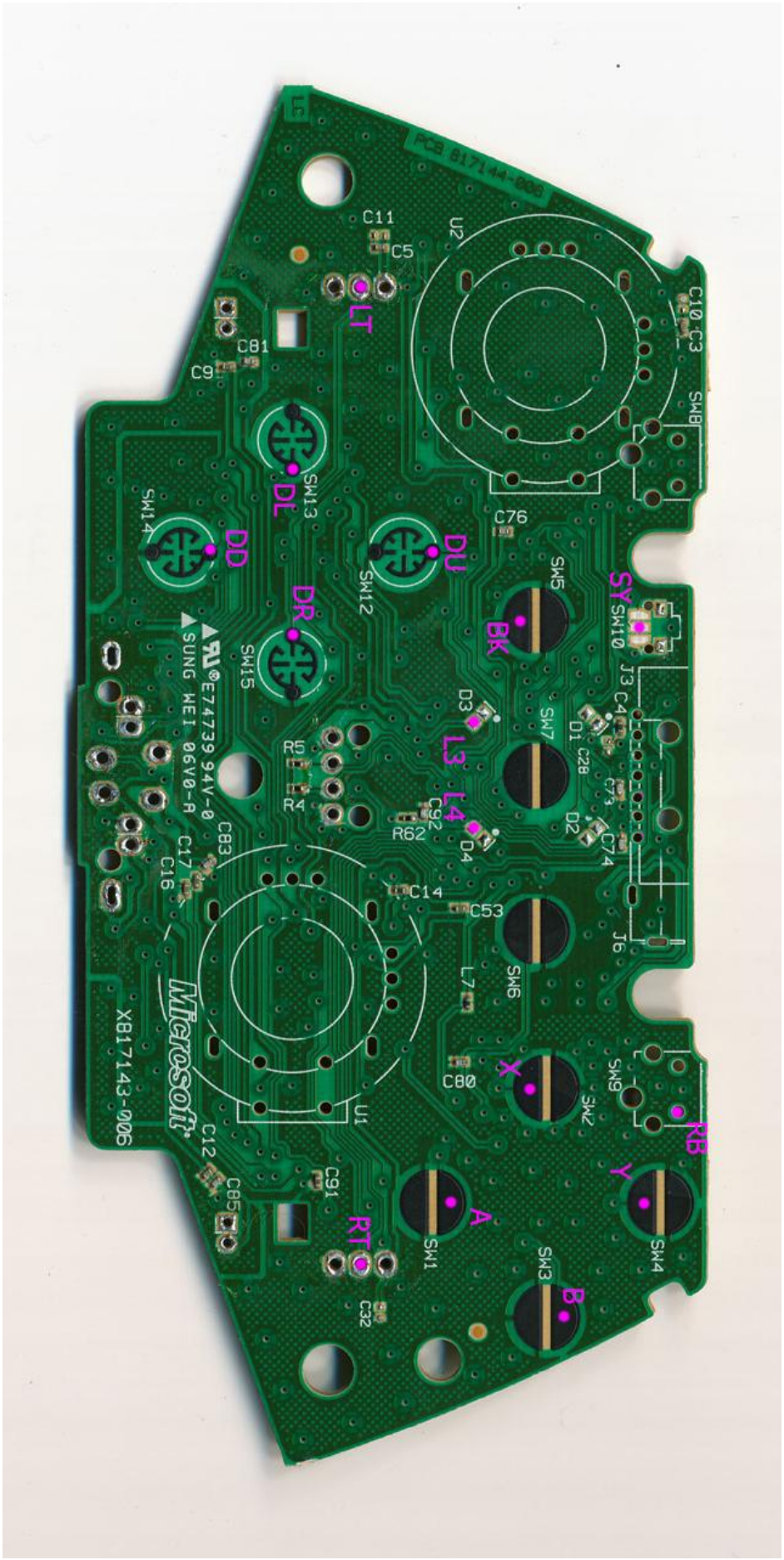
Re-assemble the shell, making sure that none of the wires from the mod install, rumble motors, optional programming jack or mod switch get "pinched" between the shell. If the wires are routed neatly and carefully, the shell should close just like a stock shell without any gaps in the shell when it is screwed back together.

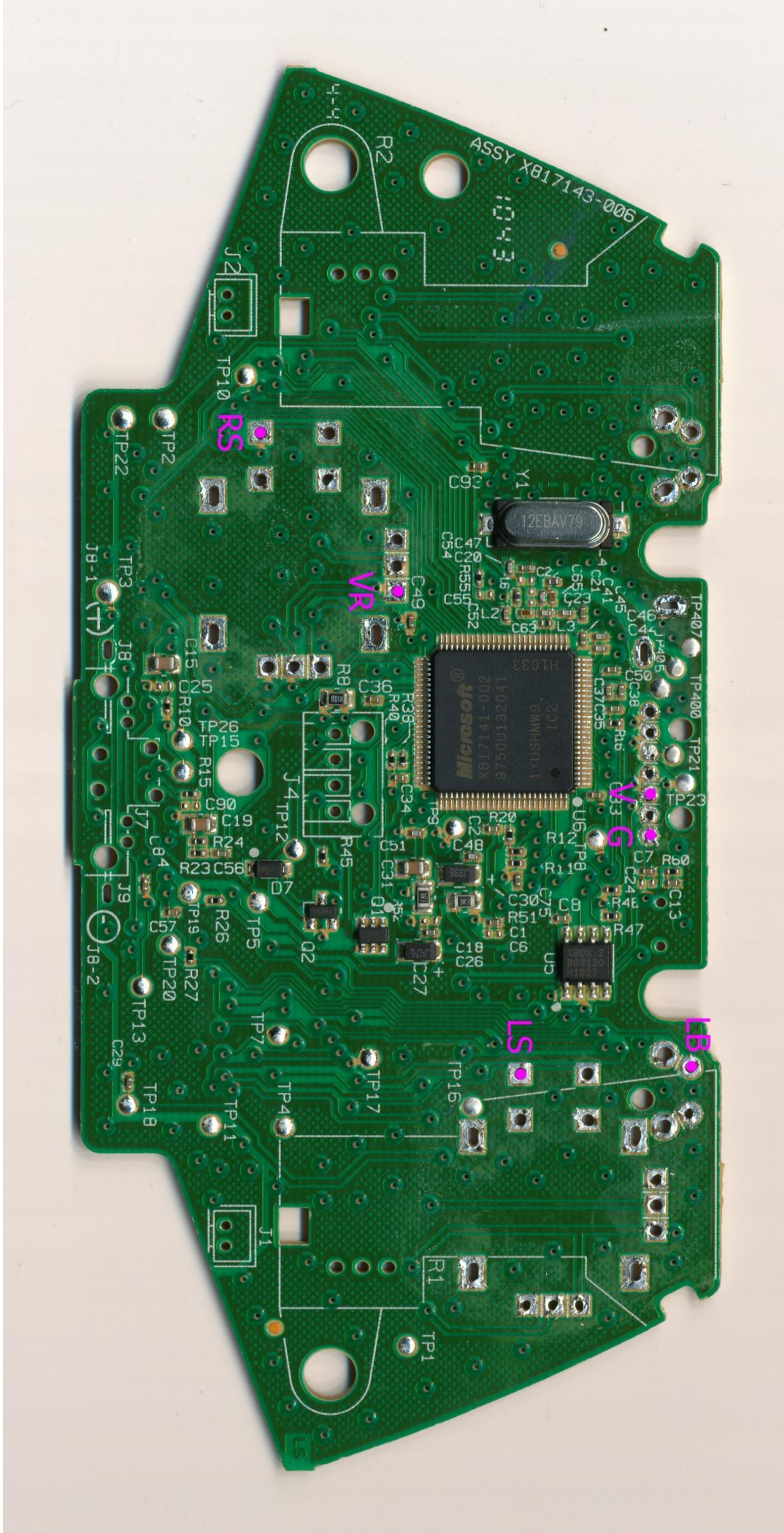
Sync your XBOX 360 controller to a console, then try activating one of the mods. If a mod activates, your install was probably a success!

Once you've checked that the controller is fitting properly together, and wires aren't getting pinched, install the 7 screws into the back of the controller.

Final step: go enjoy your new programmable rapidfire controller!

Appendix A: Solder Point Quick Reference Photos

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