XBOX360

Legacy Modchip

Odin's Raven

Installation Instructions

Tools needed

- XBOX360 Controller with CG2 Circuit board
- Viking360 Legacy modchip kit (includes 2 tac switches and USB jack)
- Soldering Iron and solder
- 30 AWG wire (American wire gauge) or similar
- Wire strippers (capable of stripping above wire)
- Electrical tape
- Torx T-8 Security Screwdriver
- Hobby knife
- Solder Flux
- Cotton Swabs
- Isopropyl alcohol
- Power drill
- 1/4 inch and 9/64 inch drill bits
- Hot glue gun and glue
- Safety glasses

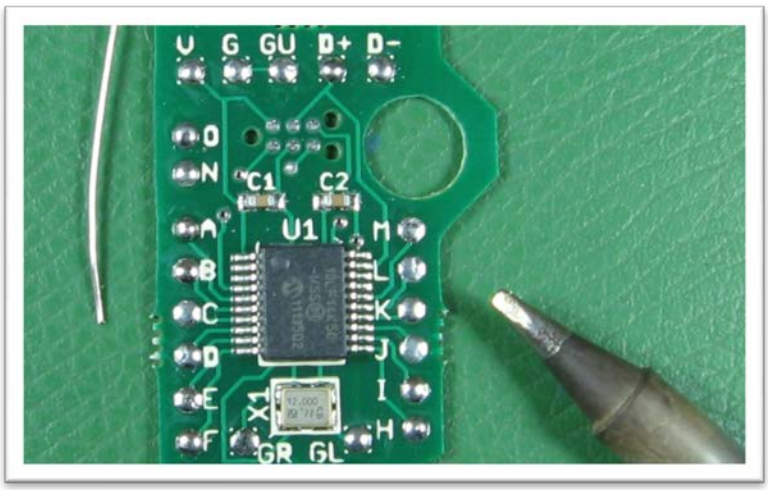
Remove the screws and cover

Once the 7 screws are removed, remove the back cover from the controller. Set the screws and screwdriver aside for later.

Prepare the modchip

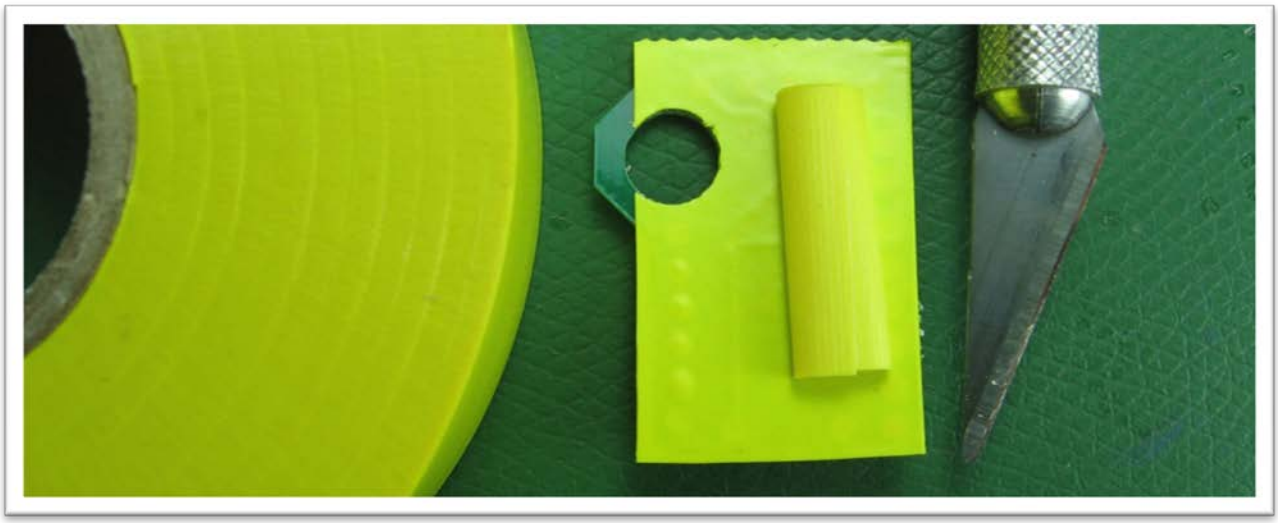
Prepare the modchip by "tinning" the solder pads we will use. You can "tin" a pad by applying a little solder. We will tin these pads: V, G, GU, D+, D-, O, N, A, B, C, D, E, F, GR, GL, H, I, J, K, L and M.

Modchip before tinning



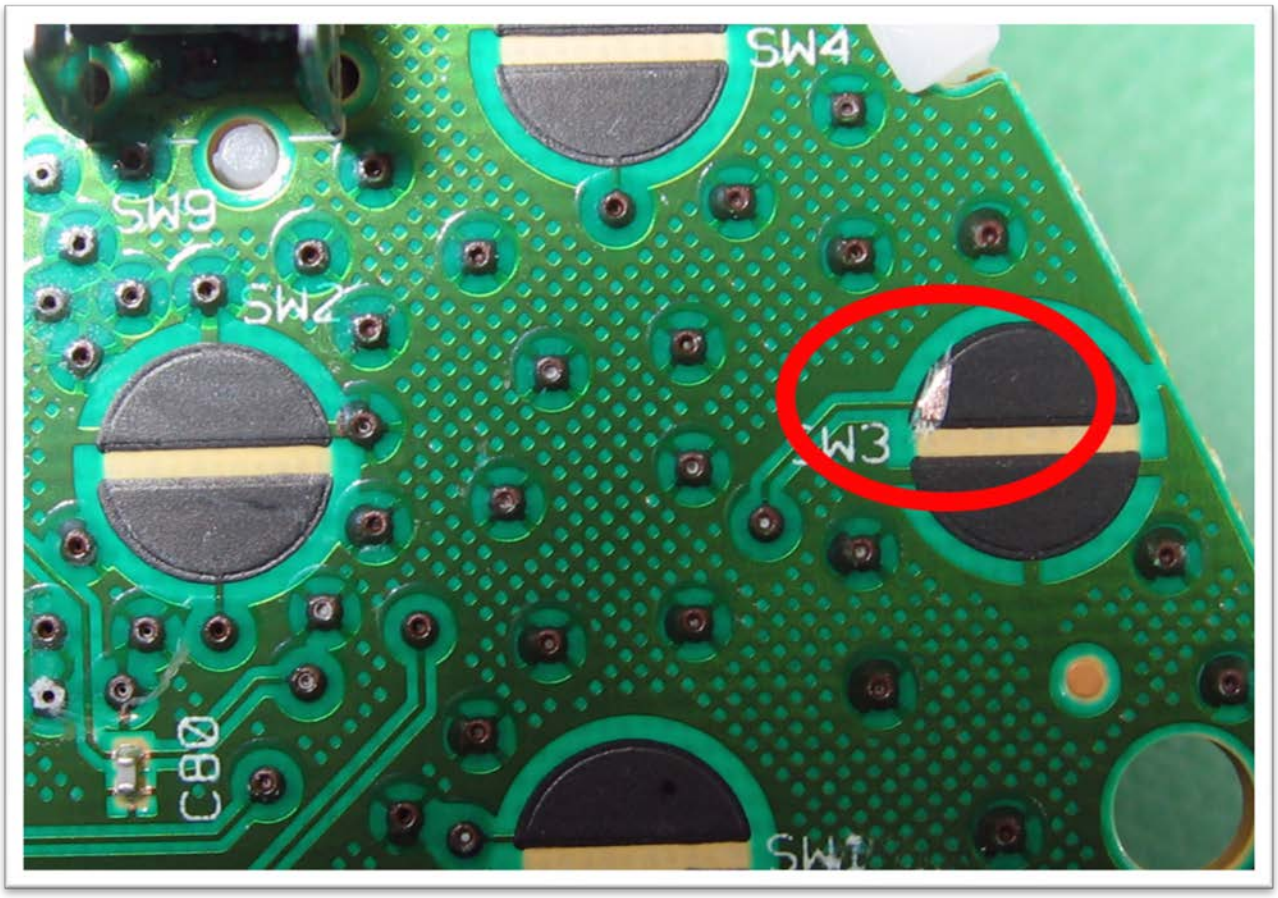
Modchip after tinning

Finish preparing the modchip by putting a piece of 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 second small piece of tape made into a "loop" to help hold the modchip in place on the circuit board. You can use a hobby knife to remove the tape covering the large hole in the modchip.

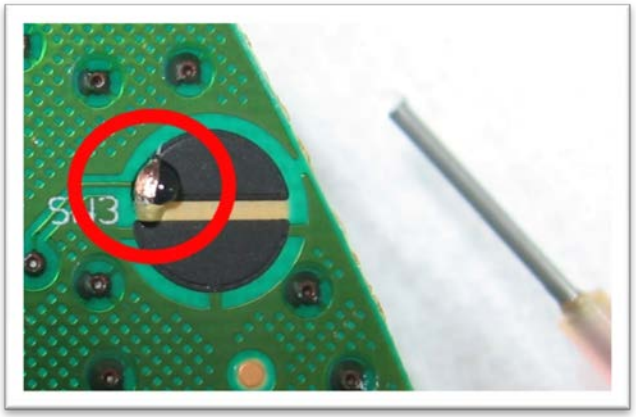


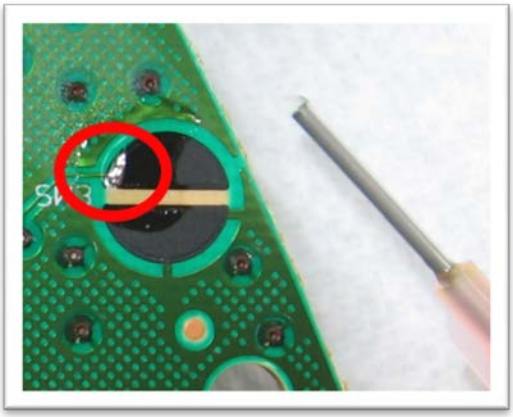
Prepare the circuit board

Using the hobby knife expose some of the copper below the black pad for the B button as shown below:

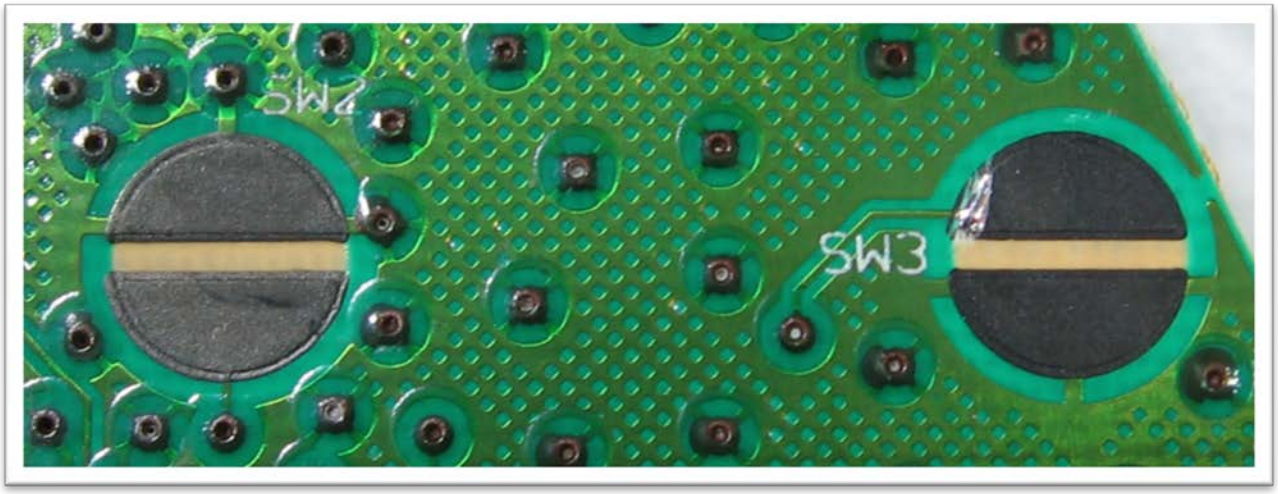


Apply some flux to the exposed copper and tin the copper. The flux will clean any oxidation off of the copper allowing the solder to stick. You can tin this copper by putting solder on your iron, and running over the surface of the copper while it is covered in flux. See below for example:

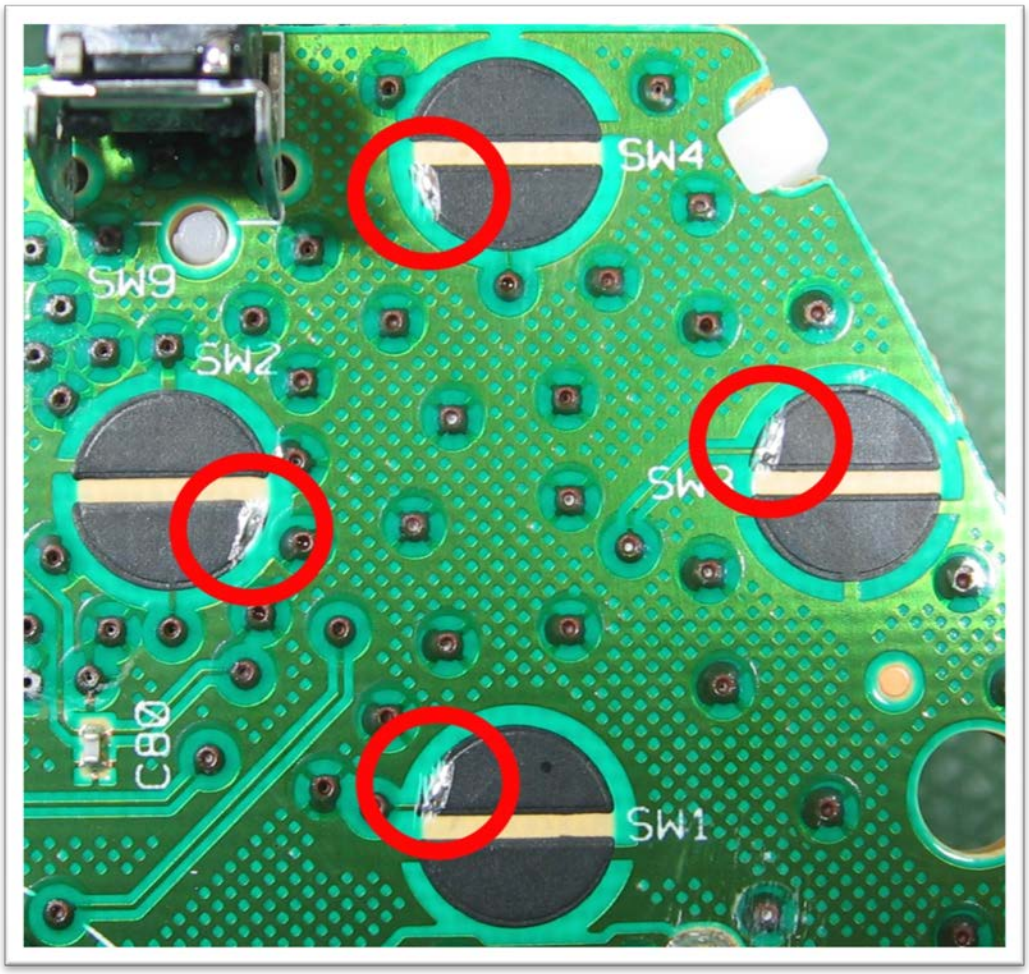




The flux can be cleaned by wiping it up with a dry cotton swab; any remaining residue can then be cleaned with a small amount of isopropyl alcohol and then wiped with a clean cotton swab. The tinned and cleaned pad is shown below:



Expose the copper and tin the pads for the remaining 3 pads as shown below:

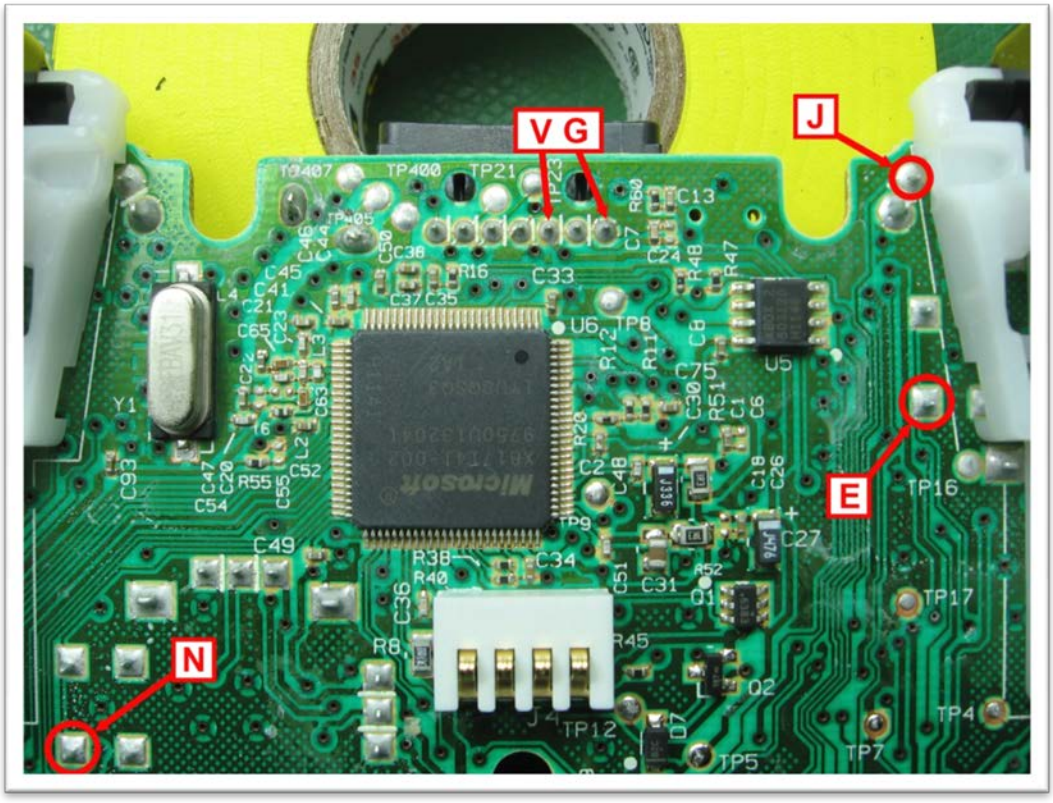


Strip the wires

We are ready to begin installing wires. Use the wire strippers to cut and strip the wires. Only a very small amount of wire needs to be stripped to get the job done; see photo below for an example.

Begin soldering the wires

Solder the first 5 wires, "V, G, N, E and J" per the diagram below:



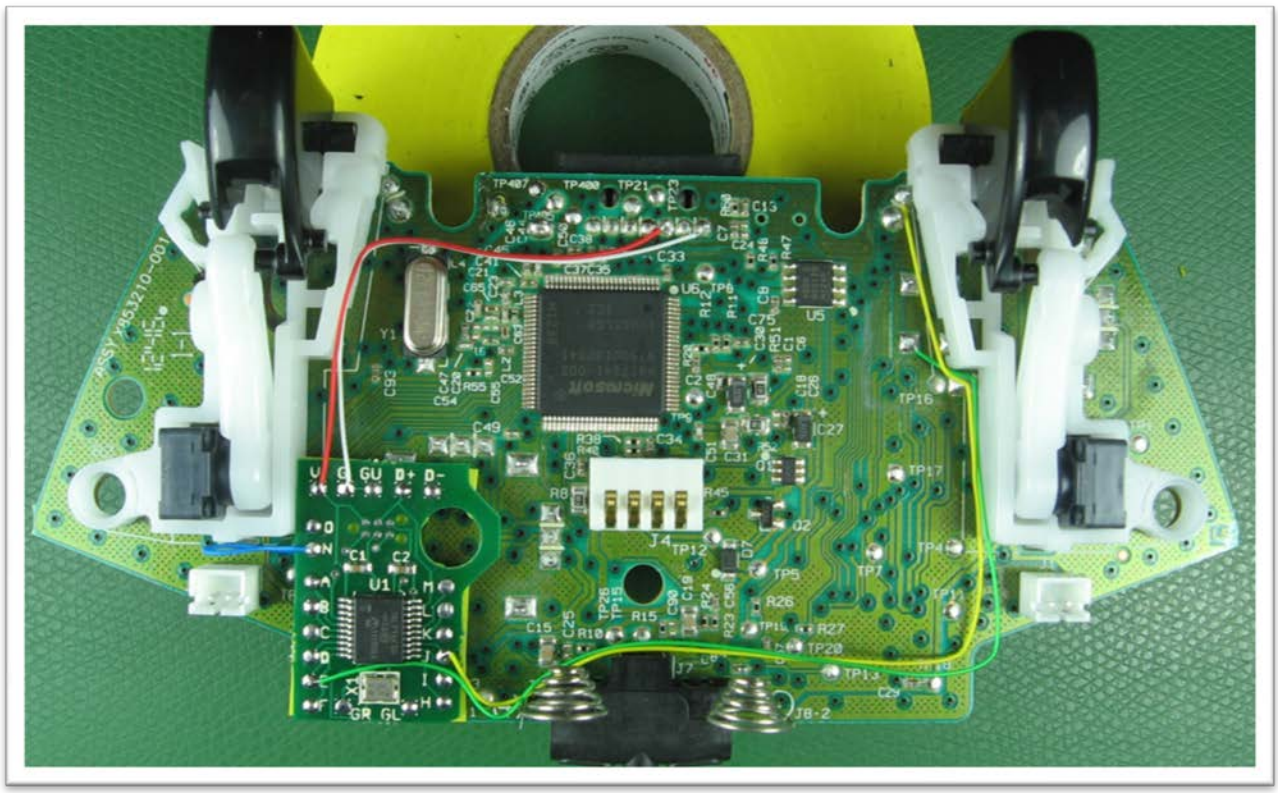
*The N wire is placed underneath the modchip and must be soldered in place before the modchip is put into place. The rest of the wires can wait to be attached until after the modchip is placed on the circuit board, in the next step, if you prefer.

Place the modchip

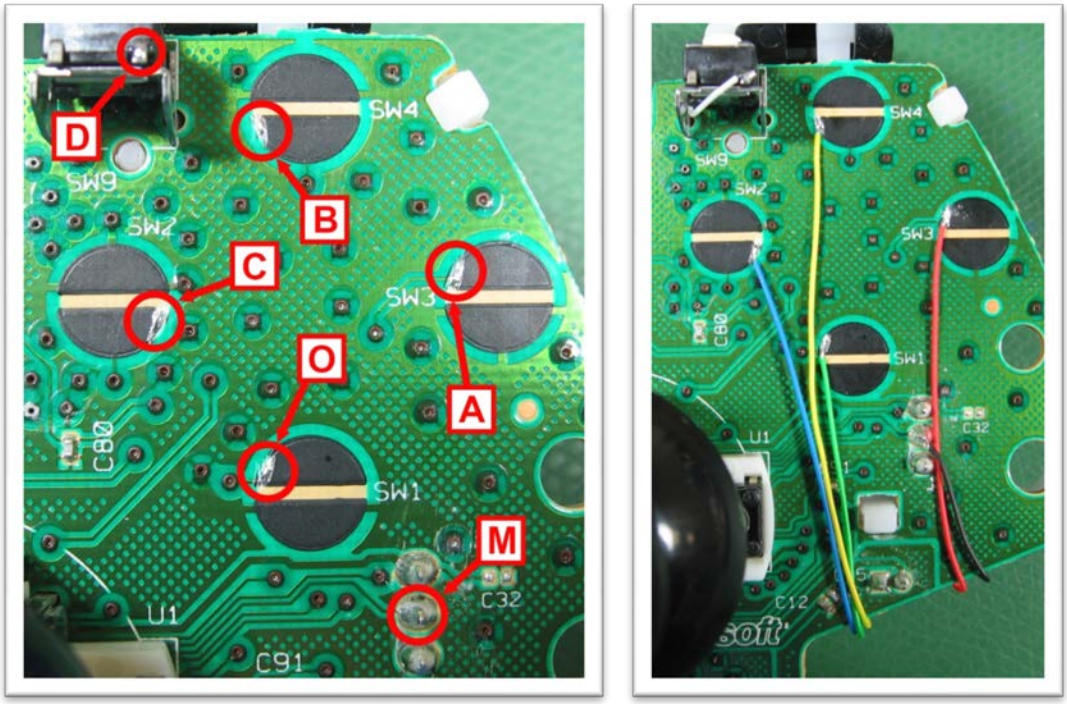
Put the modchip onto the circuit board as shown below. Make sure the bottom of the modchip is flush with the bottom of the circuit board and the left side of the modchip is resting against the white plastic of the trigger.

Finish soldering the wires

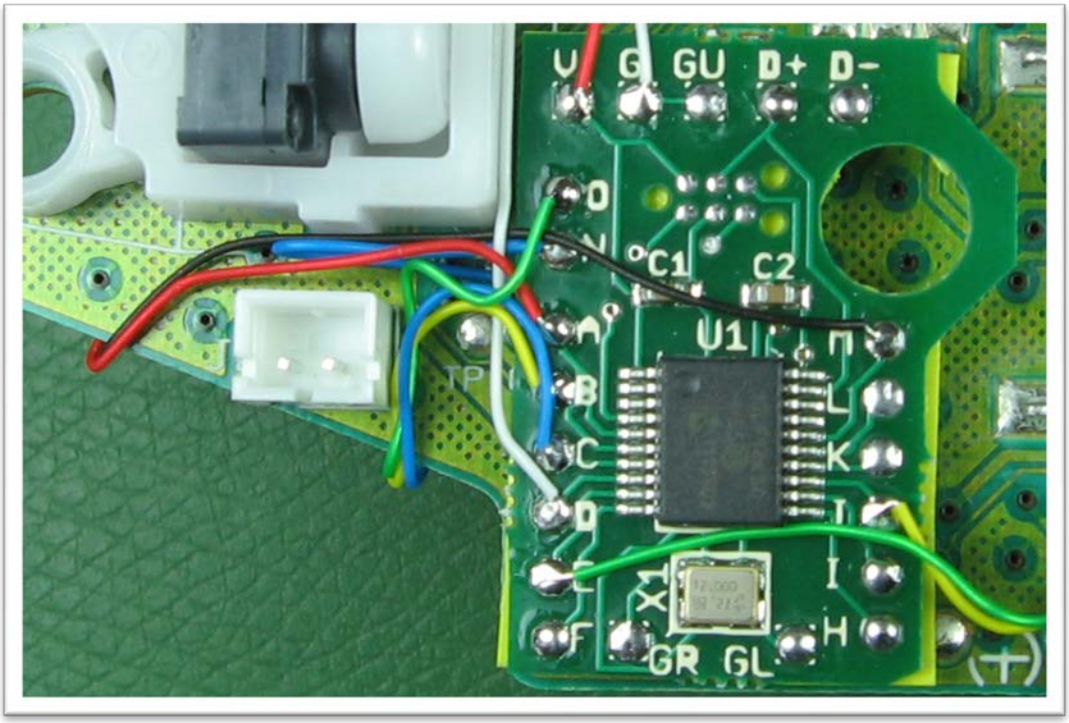
Solder the V, G, N, E and J wires to the modchip. Here is an example of a clean installation of the first 7 wires.



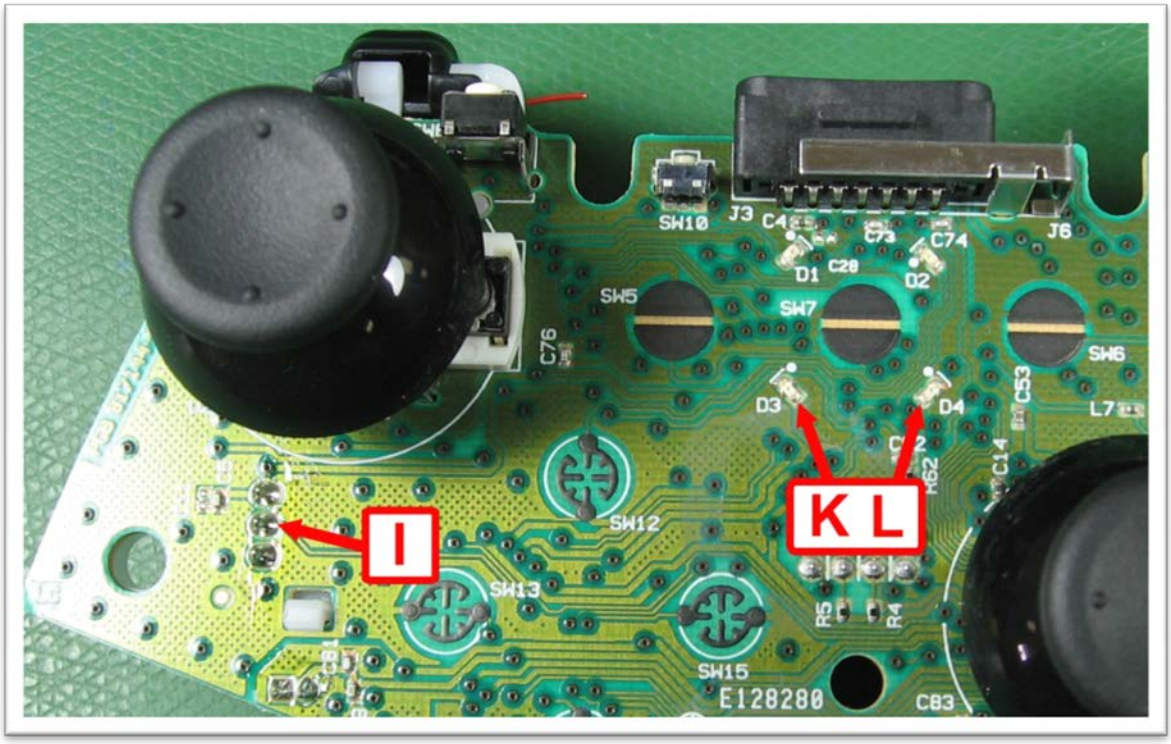
Next wire the A, B, C, D, M and O wires to the opposite side of the circuit board as shown in the diagram below. Be careful not to cover the black pads with your wires as you run them to the other side of the circuit board.



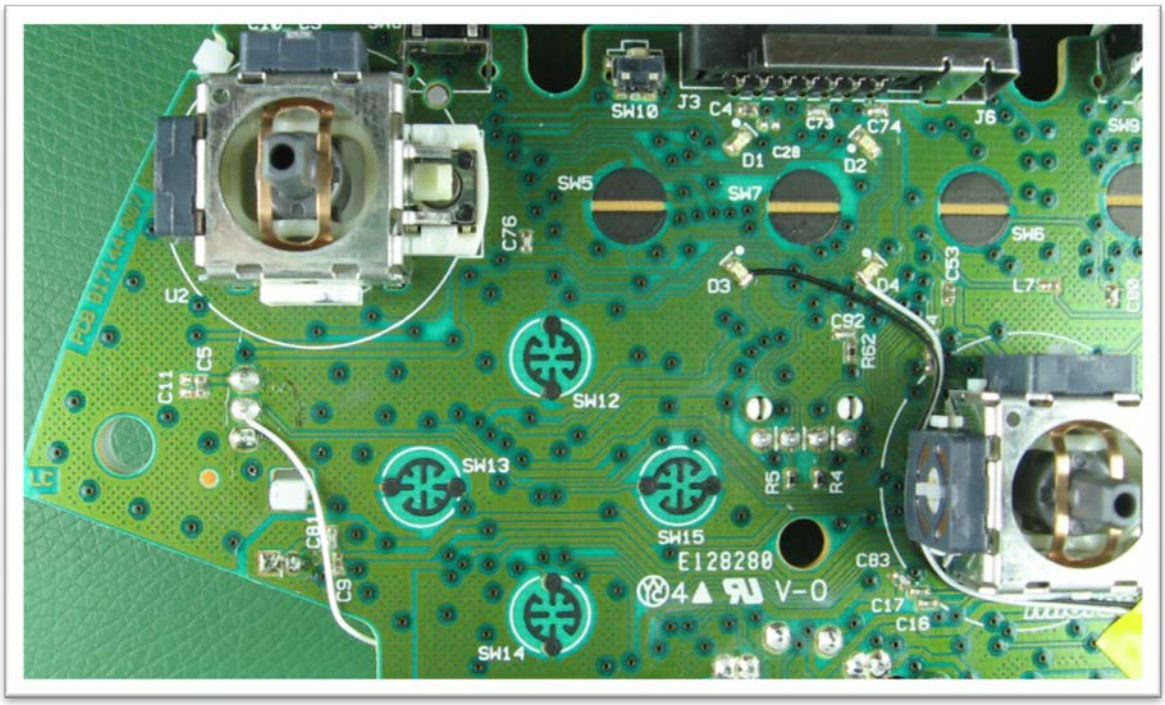
You can now connect the A, B, C, D, M, and O wires to the modchip as shown in the diagram below:



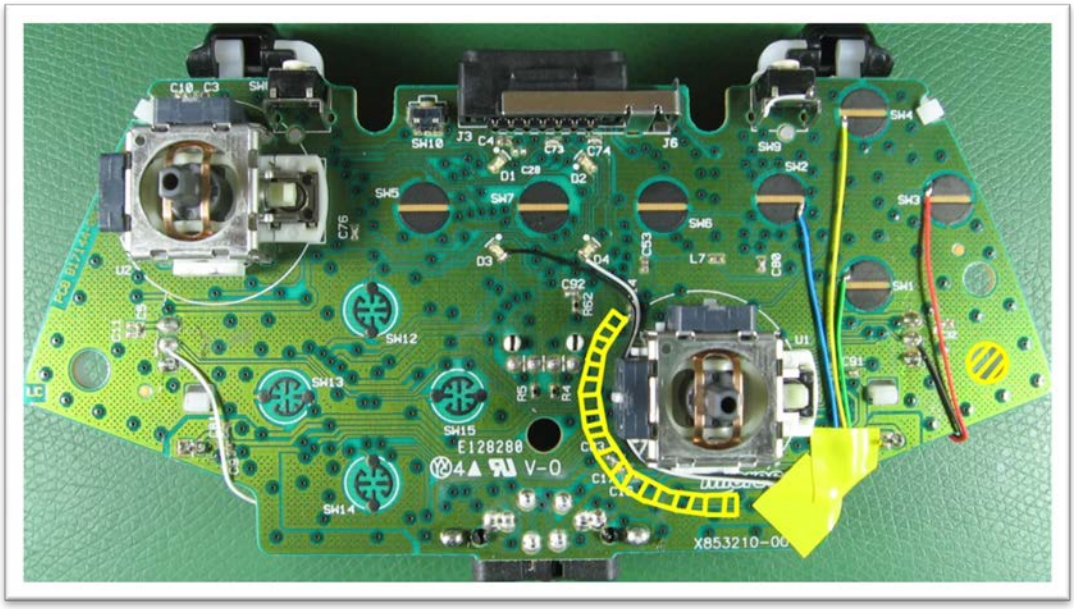
Now it is time to wire the "I, K, and L" wires to the circuit board per the diagram below:



To wire the K and L wires to the LEDs place a dab of solder on the lower side of the LEDs in the location shown above. This will make it easier to attach the wires as shown below:



Below is an example of a clean installation of the wires on this side of the controller circuit board. The K and L wires need routed as shown around the left side of the right thumbstick; be careful to stay out of the yellow "Keep Out" areas shown below:

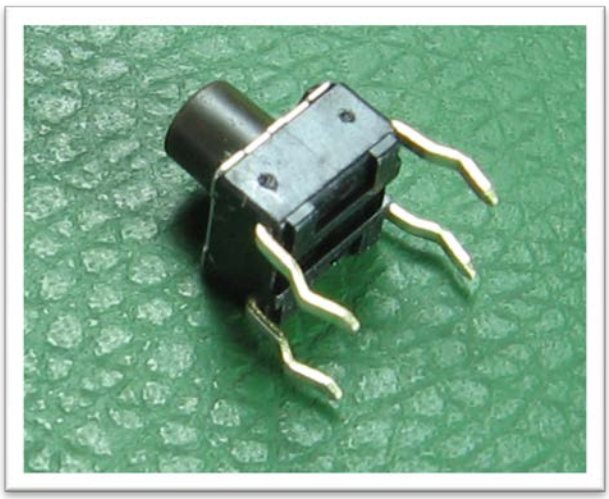


Now it is time to wire the K, L and I wires to the modchip as shown in the diagram below:

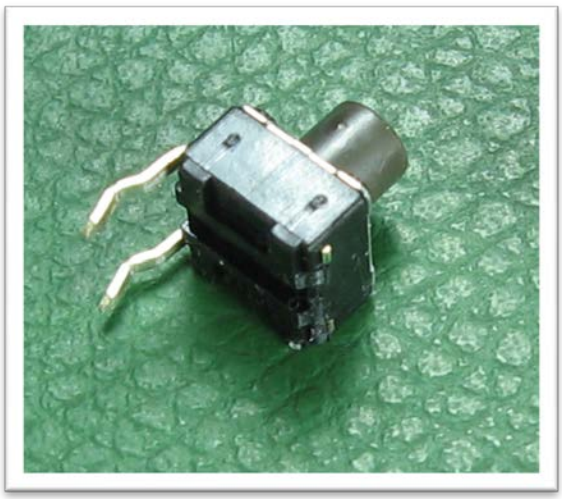
Also attach the F/GR and H/GL twisted wires to the modchip. These wires will be connected to the tac switches later. You can tape the E, I, J and H/GL wires to hold them in place and help keep them out of the yellow "Keep Out" circle.

Tac switches and USB jack

It is now time to install the 6mm tac switches into the shell. Cut any two legs that are on the SAME SIDE of the switch. Only two legs are needed. See the example below:



Untrimmed tac switch

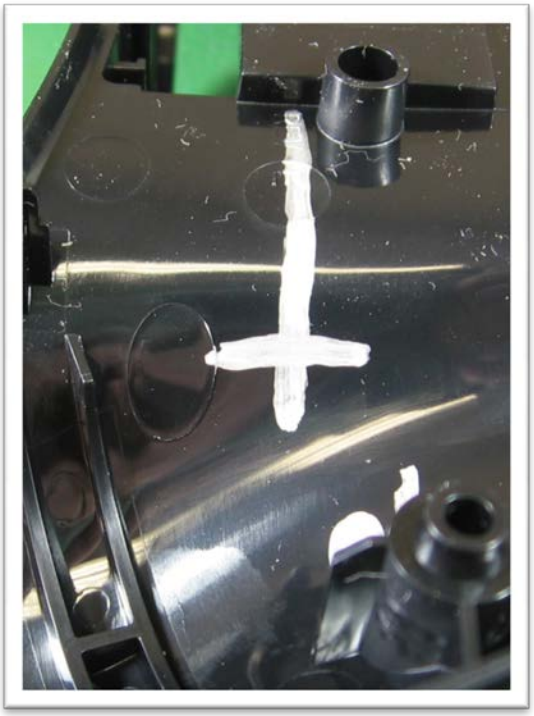


Trimmed tac switch

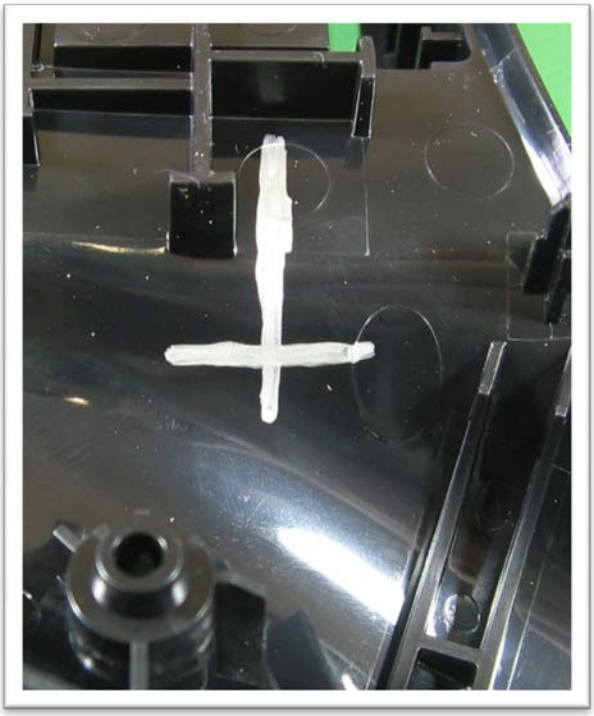
Once the tac switches are ready, it's time to mark where the holes will be drilled in the back plastic shell. Mark the bottom shell as shown in the diagram below:

Using the small tab next to the screw hole as a guide draw a straight horizontal line, this line is a reference. Below that line draw a circle. This is where the USB jack hole needs drilled.

Mark the locations for the tac switches as shown in the diagrams below:

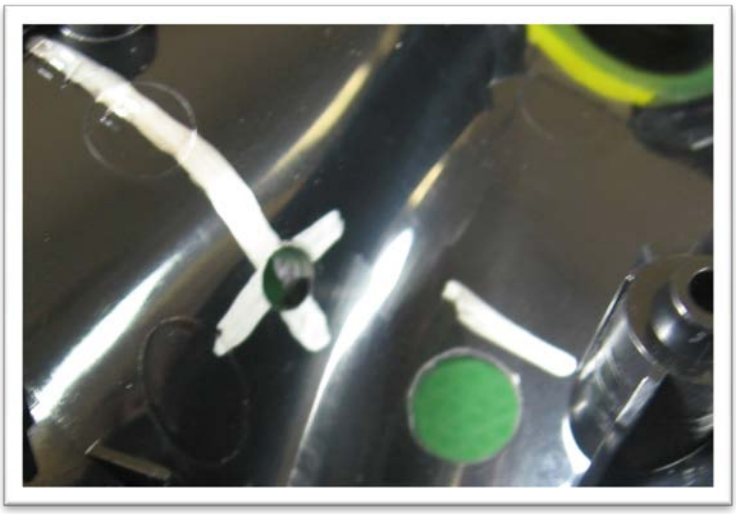


Right side tac switch



Left side tac switch

Drill the holes as shown below. Use the 9/64" bit for the tac switch holes and the 1/4" bit for the USB jack hole.



Right tac switch and USB jack

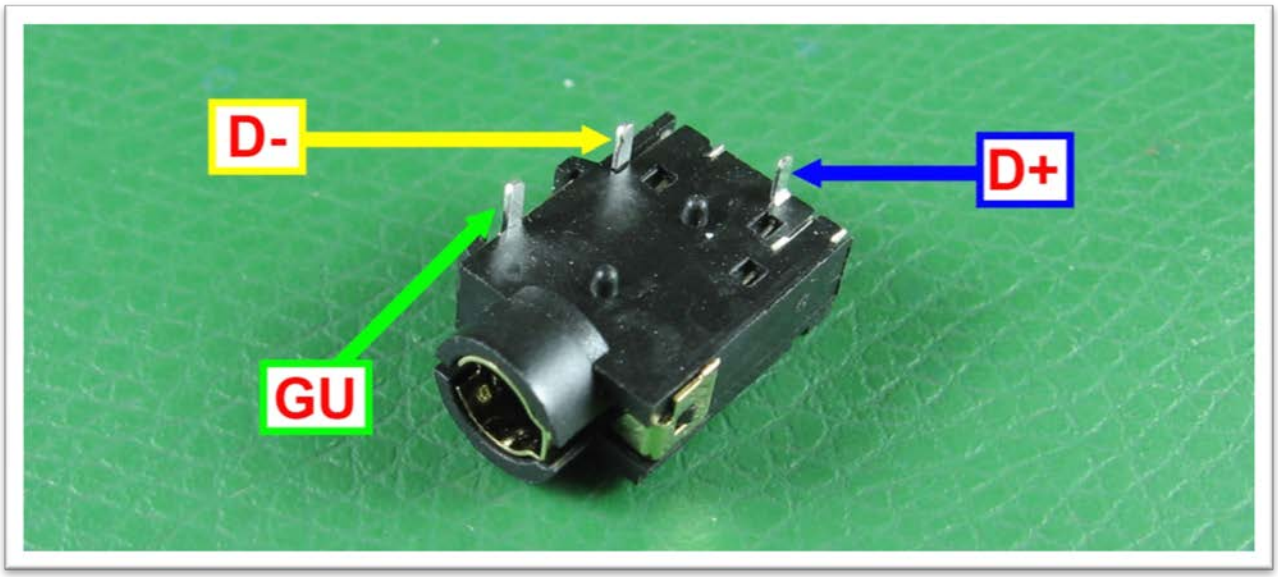
Left tac switch

Make sure there is no unnecessary plastic around the holes. Plastic can mound or create a ridge around the holes during the drilling process. This can cause the tac switches or the USB jack to not sit properly and come loose over time. See the diagram below for examples:

Holes with excess plastic

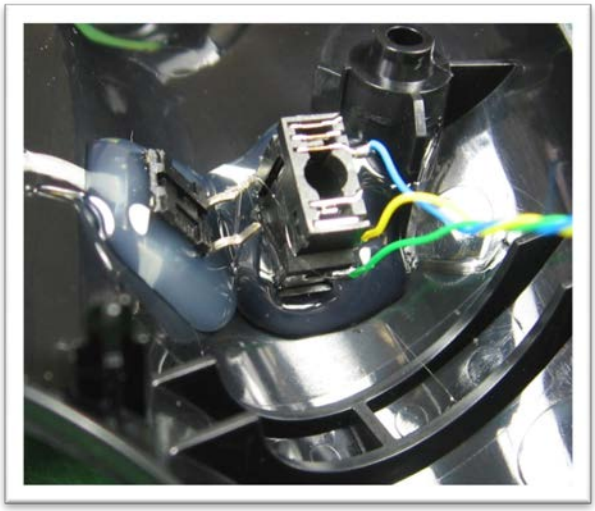
De-burred holes

Next, trim the unneeded pegs off the USB jack and attach the wires. When finished it should look like the diagram below:



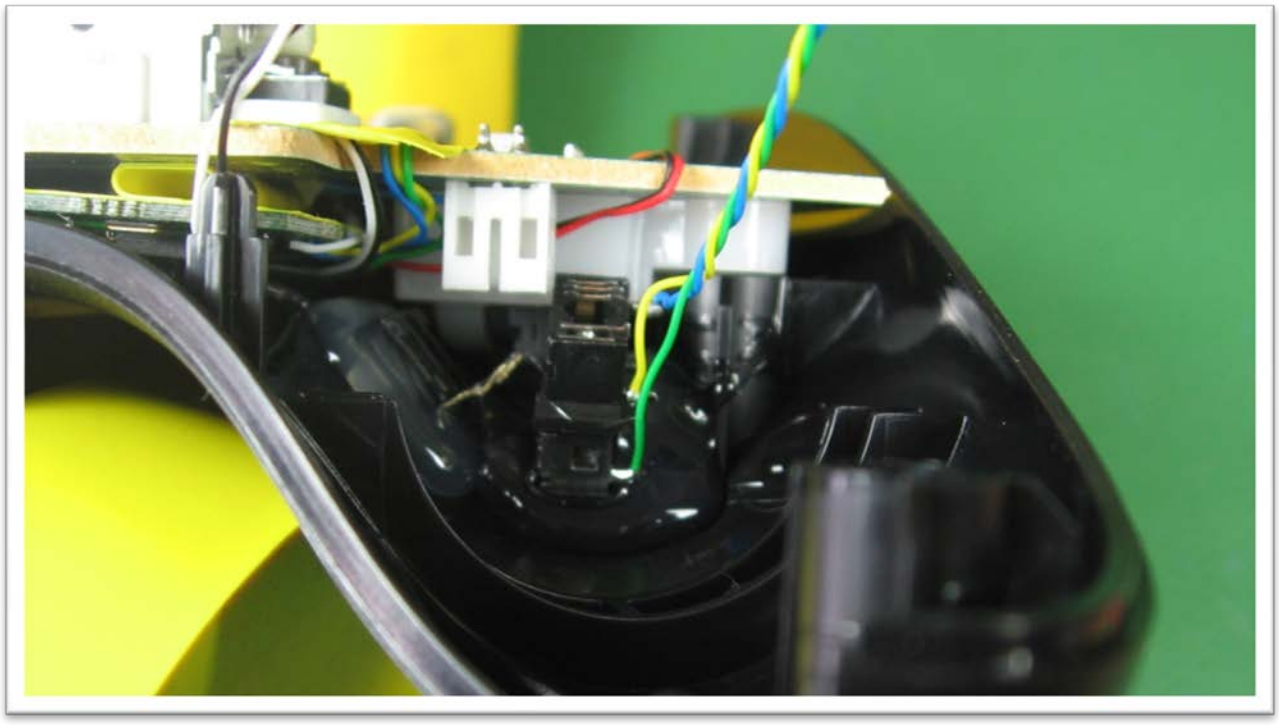
Now it is time to glue the tac switches and USB jack into the shell. Start by placing a ring of hot glue around the USB jack hole. This will allow the shoulders of the USB jack to sit on the ring of glue so the opening of the USB jack is flush with the outside of the shell.

Next, glue the tac switches and the USB jack into the shell as shown below:



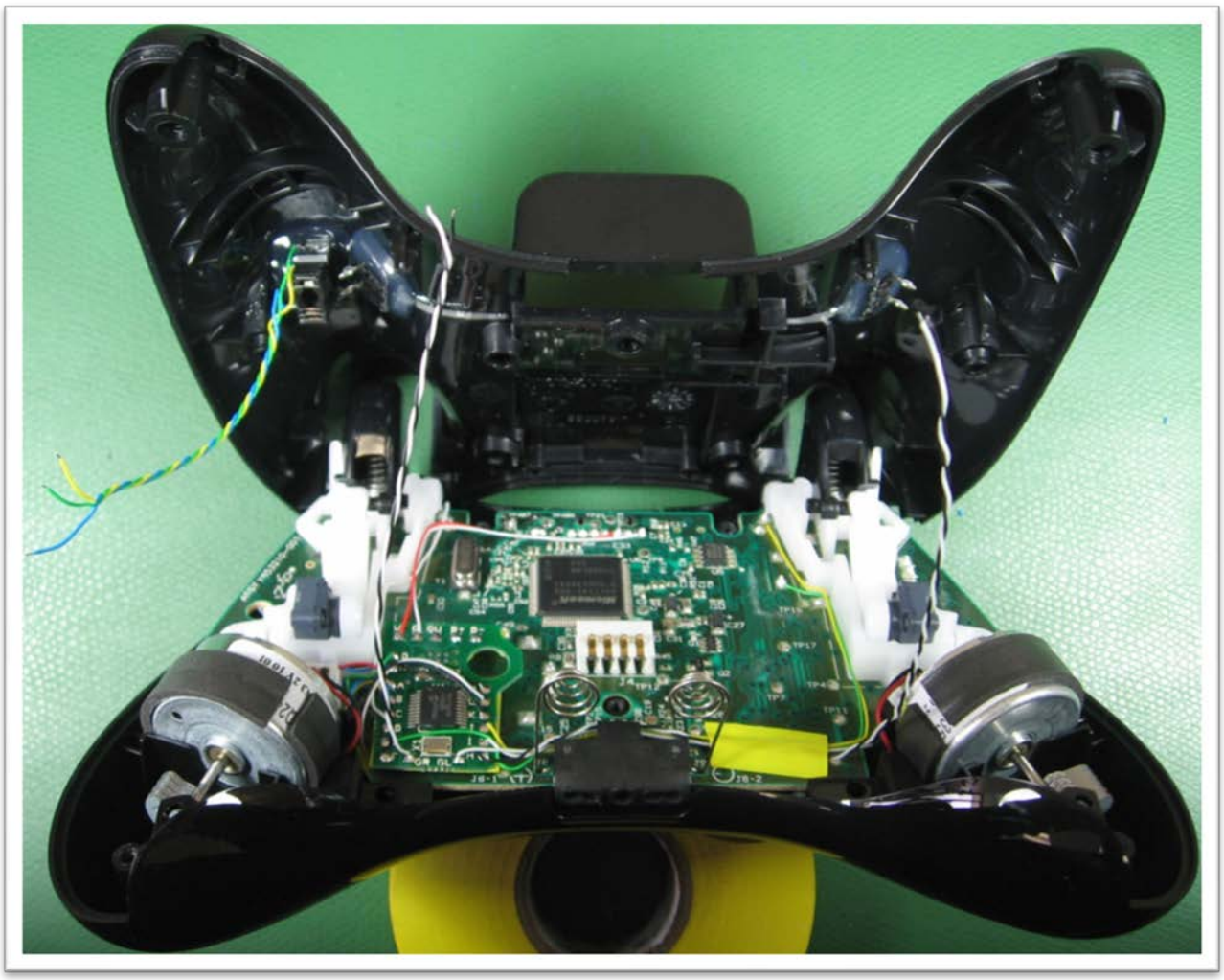
While the hot glue is drying make sure the USB jack is placed so the opening is flush with the outside of the shell. This can be done by moving the USB jack up and down inside the shell.

Make sure the USB jack and the hot glue do not interfere with the normal operation of the controller by placing the circuit board in the shell as shown below. If anything does interfere, you may have to remove the hot glue and try again.

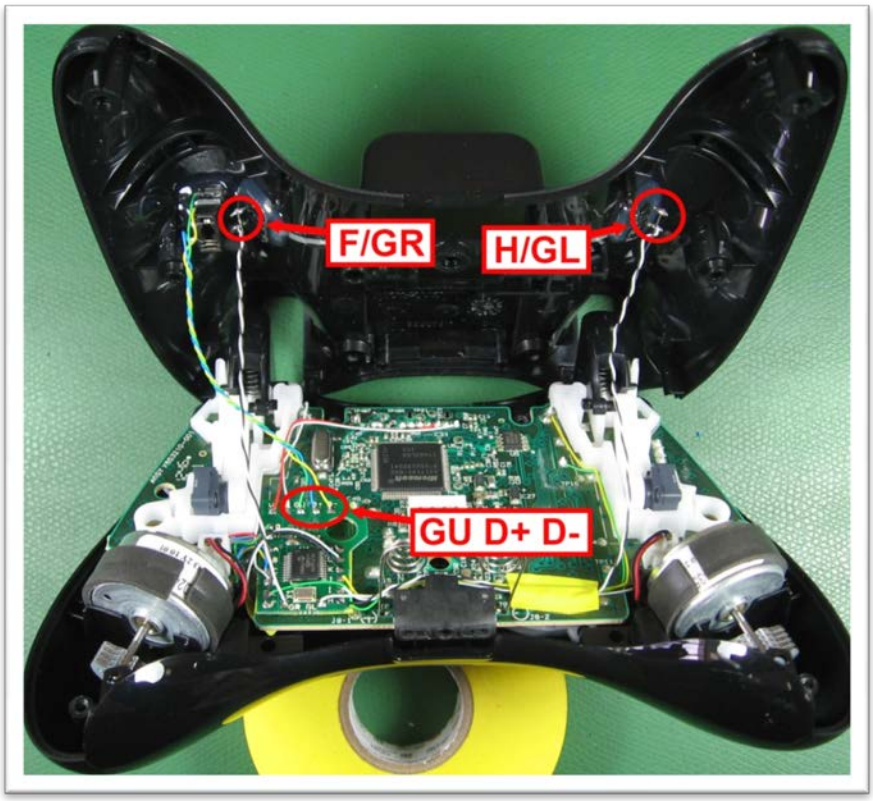


Put the controller together

After you place the controller circuit board back into the top of the shell and install the rumble pads it is time to wire in the USB jack and the tac switches.

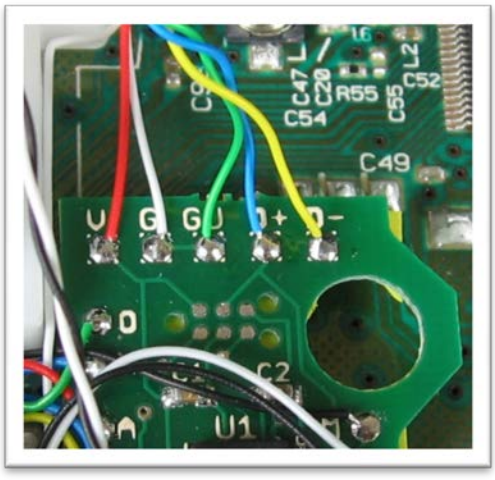


The F/GR and H/GL wires get wired to the tac switches and the GU, D+, and D- wires on the USB jack get wired to the modchip as shown below:

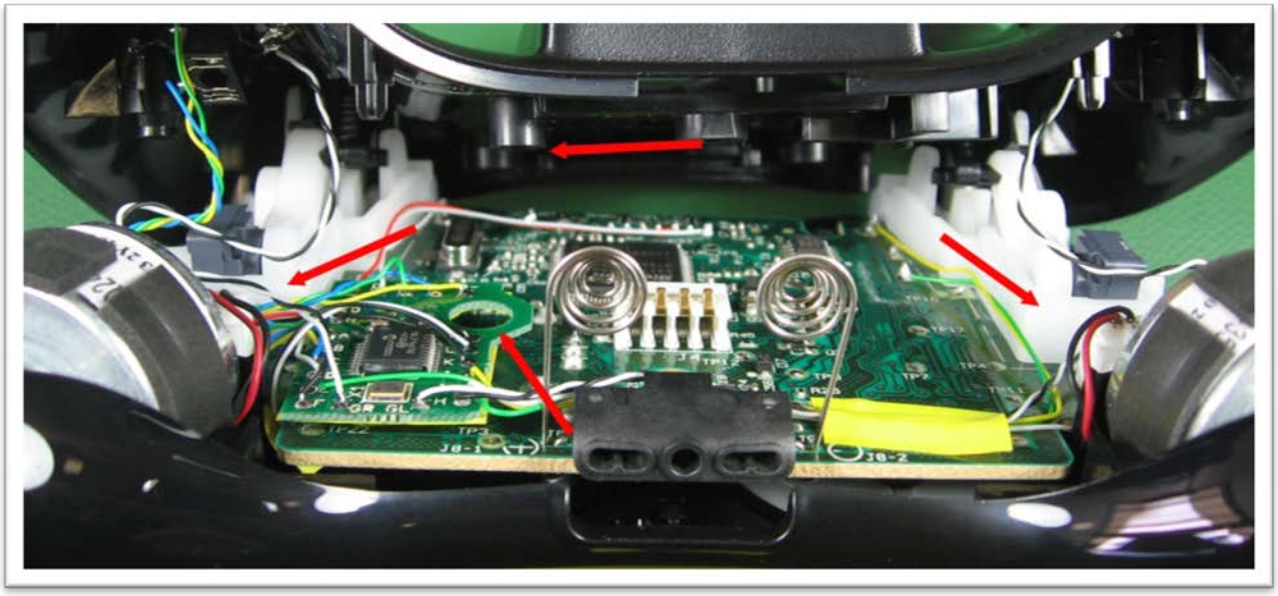


(Refer to the diagram of the USB jack on page 15 to see where each wire goes)

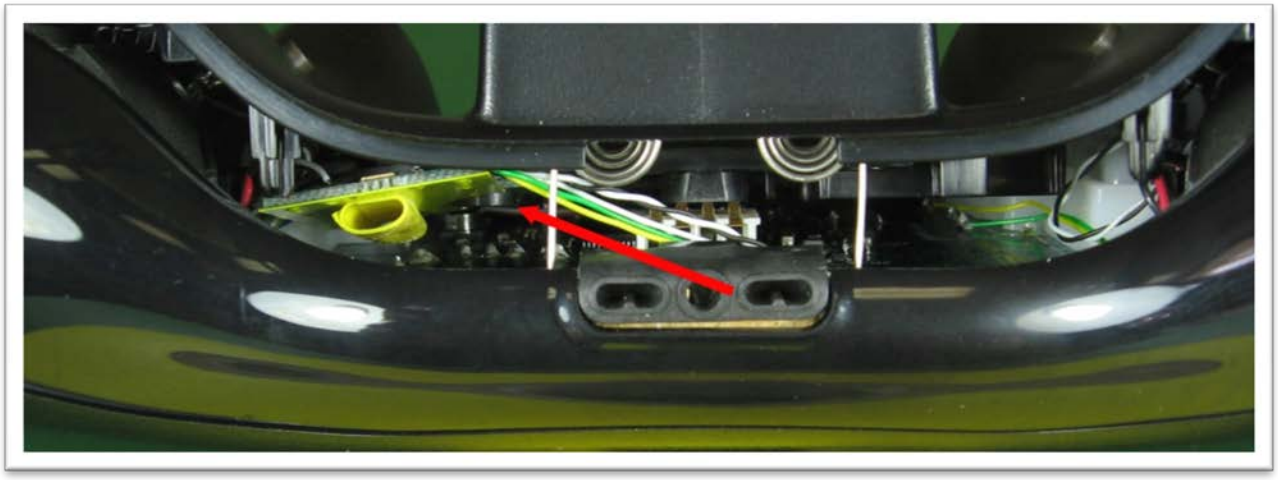
Below are close up diagrams of the tac switch wires and USB jack wires:



Now you can begin to close the shell. Make sure the tac switch wires are tucked in between the rumble pad plug and the white plastic of the trigger mechanism. Also make sure to place the large post on the bottom shell through the hole in the modchip as shown below:



Using some tweezers or similar small object, push the modchip up so the hole in the modchip is around the post circled in the above diagram. When this is complete it should look like the diagram below:



Now you can finish closing the controller.

Once the controller is closed make sure the H, I, J and H/GL wires are visible and not pinched by the case. Wire placement should be as shown below:

Now you can put the 7 screws back in the controller.

Test the Controller

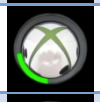
To test your new Odin's Raven controller visit: http://www.viking360.com to download the latest software for your controller. You will need the following files:

- Legacy Controller Software
  - http://www.viking360.com/downloads/legacy/Viking360 Legacy Rapidfire Customization Software v1.0.1.zip
- Odin's Raven test code
  - http://www.viking360.com/downloads/legacy/test-code-odins-raven.zip
- Odin's Raven all in one driver (this is the driver installed on Odin's Raven controllers when shipped from Viking360)
  - http://www.viking360.com/downloads/legacy/all-in-one-driver-odins-raven.zip

For information on how to program your Odin's Raven controller please download the Odin's Raven Programming Instructions PDF from Viking360.com:
http://www.viking360.com/downloads/legacy/instructions/odins-raven-programming-instructions.pdf

When the test code is programmed onto your controller you can use the following table to determine if your controller is wired correctly.

XBOX360 Odin's Raven Button Test Codes

Long name	Short name	LED	Photo	Number of Flashes	Solder Joint
Left Thumbstick Press	LSC	4		1	E
Left Bumper	LB	4		2	J
Right Bumper	RB	4		3	D
Right Thumbstick Press	RSC	4		4	N
Left Tac Switch	LT1	4		5	H
X Button	X	3		1	C
Y Button	Y	3		2	B
B Button	B	3		3	A
A Button	A	3		4	O
Right Tac Switch	RT1	3		5	F
Left Trigger	LT	3 THEN 4		1	I
Right Trigger	RT	3 THEN 4		2	M