XBOX One

Ragnarok

Rigid Modchip

Installation Instructions

Revised 9/28/2015

Tools needed

- XBOX One Controller
- Viking XBOX One Ragnarok Rev D modchip DIY Kit (includes mod chip, LED board, LED lense, ribbon cable, mod switch)
- Soldering iron and solder
- 30 AWG wire (American wire gauge) or similar
- Wire strippers (capable of stripping above wire)
- Electrical tape
- Small flathead screwdriver or similar prying tool
- Security Torx 8 and regular Torx 6 screwdrivers
- Power drill
- 9mm and 9/64 inch drill bits (intermediate sizes also useful)
- Hot glue and glue gun
- Safety glasses
- Additional useful items: flux, tweezers, scissors, wire snippers, etc.

Please note that throughout the physical portion of installation guide, such as removing battery packs and disassembling the controller, has not changed much from one Microsoft circuit board to another. In the interest of saving time, throughout this guide we may "recycle" photos from previous installation guides.

Remove the screws and cover

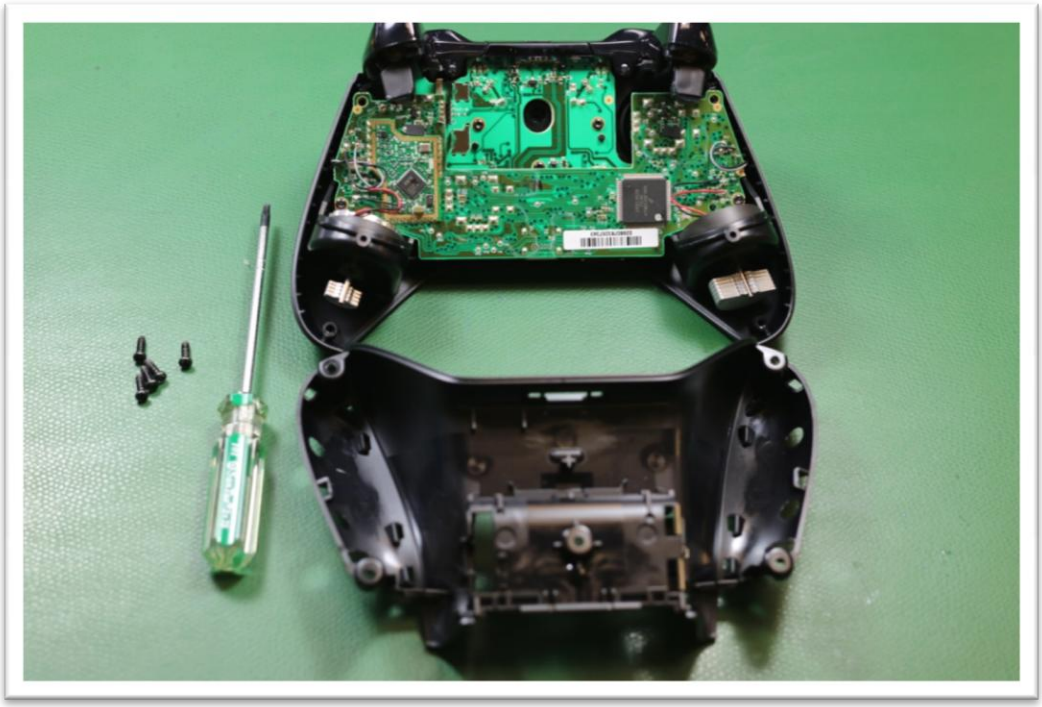
You'll need to remove two plastic handle covers to reveal the screws. Special care should be taken not to scratch the shell. One way to accomplish this is to use a small flat-head screwdriver as a prying bar. Depress the trigger, then push the screwdriver in next to the trigger such that it won't scratch the trigger. Use the screwdriver to pry the handle away from the shell.

Once you've started with the screwdriver, you can finish removing the handle covers with your fingers. Some force is required to pull the covers off.

Once the handle covers are removed you'll need your Torx screwdrivers. Go ahead and remove the battery pack cover now.

There are five screws that need to be removed. Each screw is indicated in the photo below with a red arrow.

Once the five screws are removed, flip the shell over to expose the circuit boards inside of the controller.

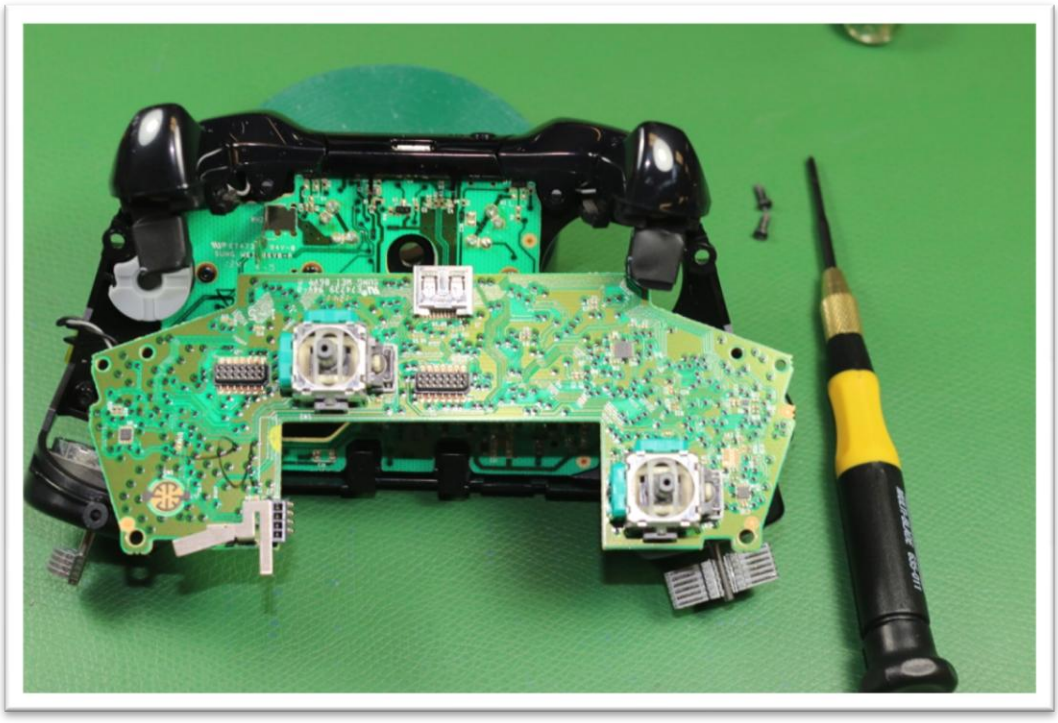


The faceplate can also be lifted off, and the thumb stick caps should be removed and set aside.

Disassemble the circuit board

Remove the two Torx 6 screws indicated in the picture.

Pull the “boomerang” shaped circuit board away from the controller and flip it over. The wires for the rumble motors can stay attached.



Drill Shell and Install Indicator

The LED indicator is installed into the faceplate. A 9mm hole must be drilled into the faceplate to accept the indicator, which is 9mm in diameter. You may oversize the hole, but if you drill the hole at 9mm, the LED indicator will press-fit into the hole nicely. 9mm drill bits are available from UK dealers on E-Bay.

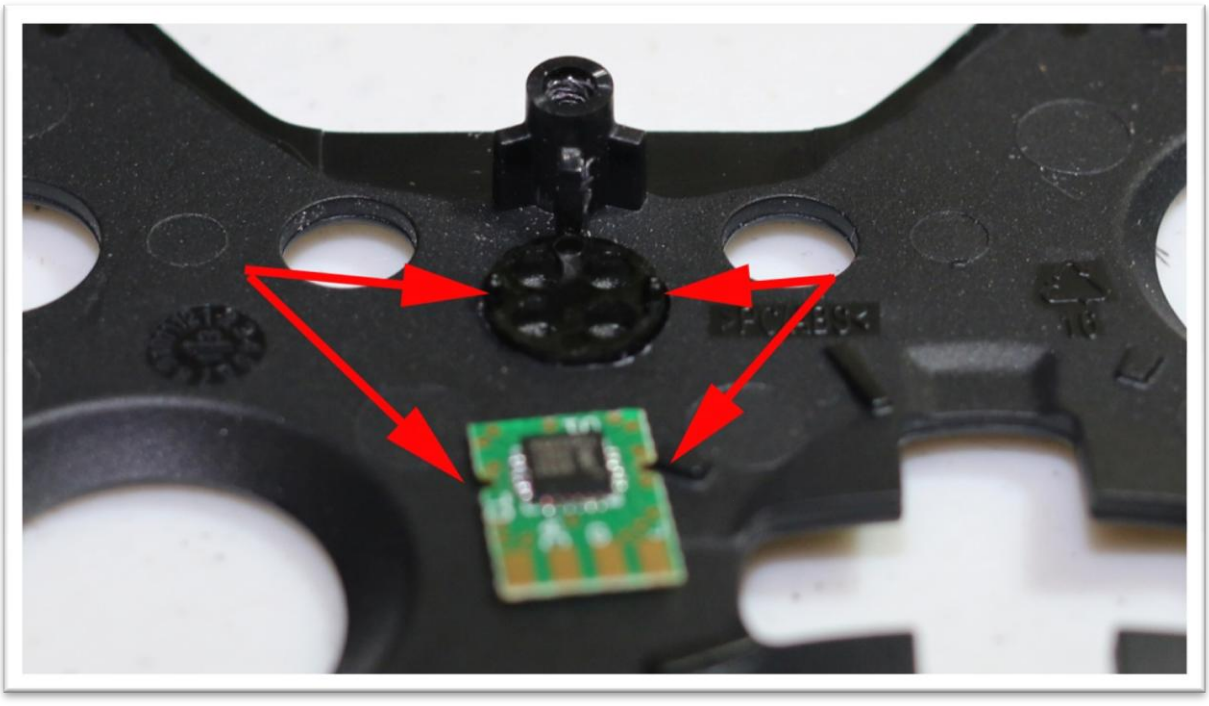
Notice the injector mark that looks like a large circle with the letter “A” inside. This injector mark can be used as a visual guide to help center the 9mm hole.

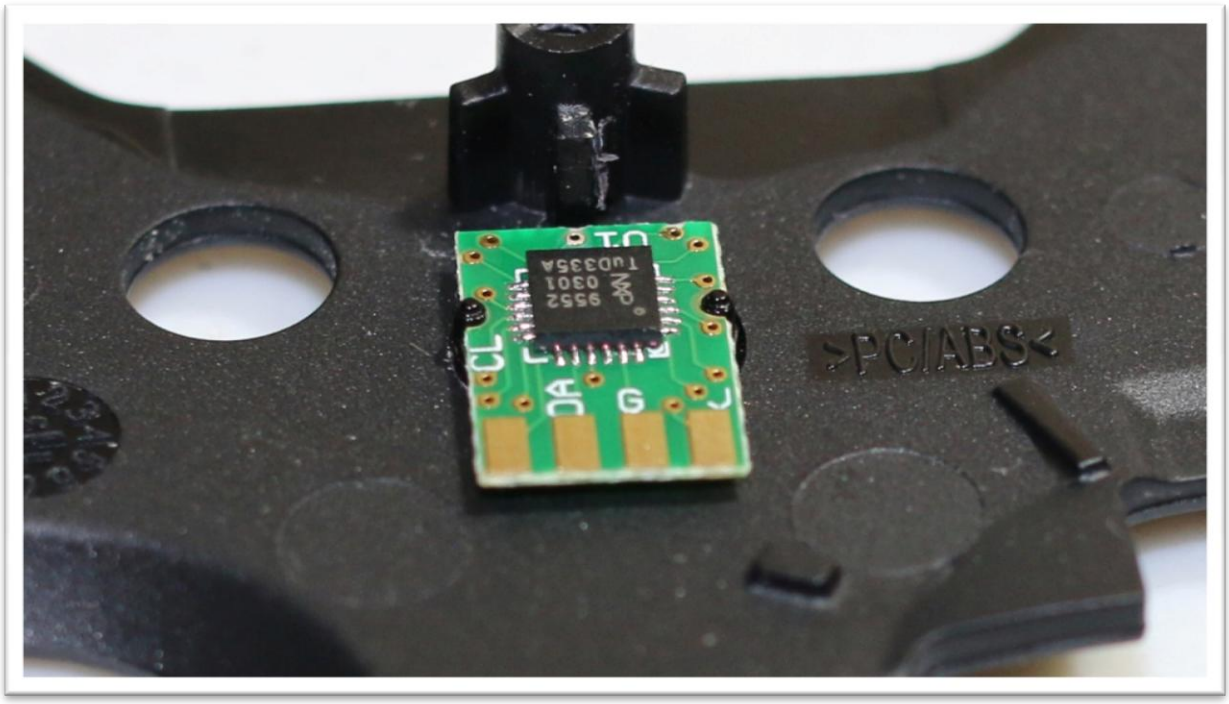
Begin by drilling a smaller pilot hole, using the injector mark as a visual guide.

For best results, drill another larger intermediate sized hole, but don't drill the 9mm hole yet.

Finally, drill the 9mm hole. The 9mm hole should sit about flush with the plastic screw peg above it, but you should not have to remove or disturb any of the plastic on the screw peg.

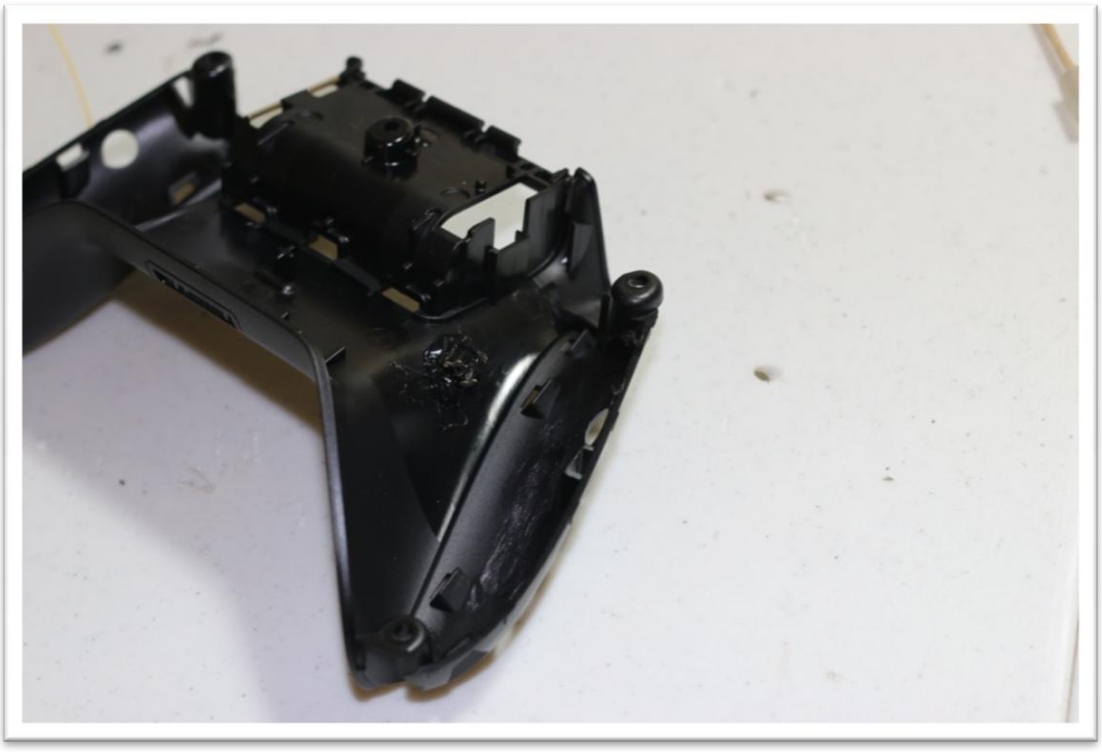
Press the LED indicator into the hole as shown. Be sure to orient the two small orientation pegs properly as these will have to mate with the LED driver board.





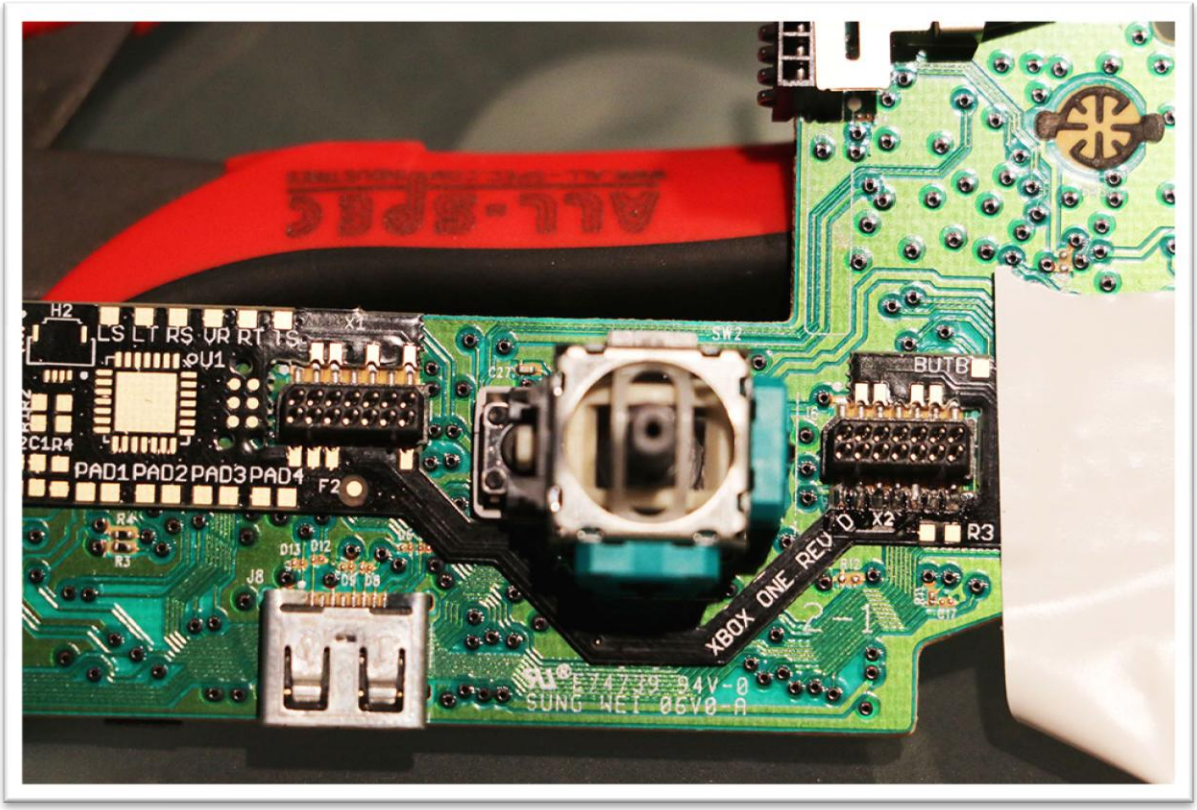
Use sufficient hot glue to hold the LED lense and LED driver board securely.

Drill a hole for, and use hot glue to install, the mod switch as desired. One possible location for the mod switch is illustrated below.



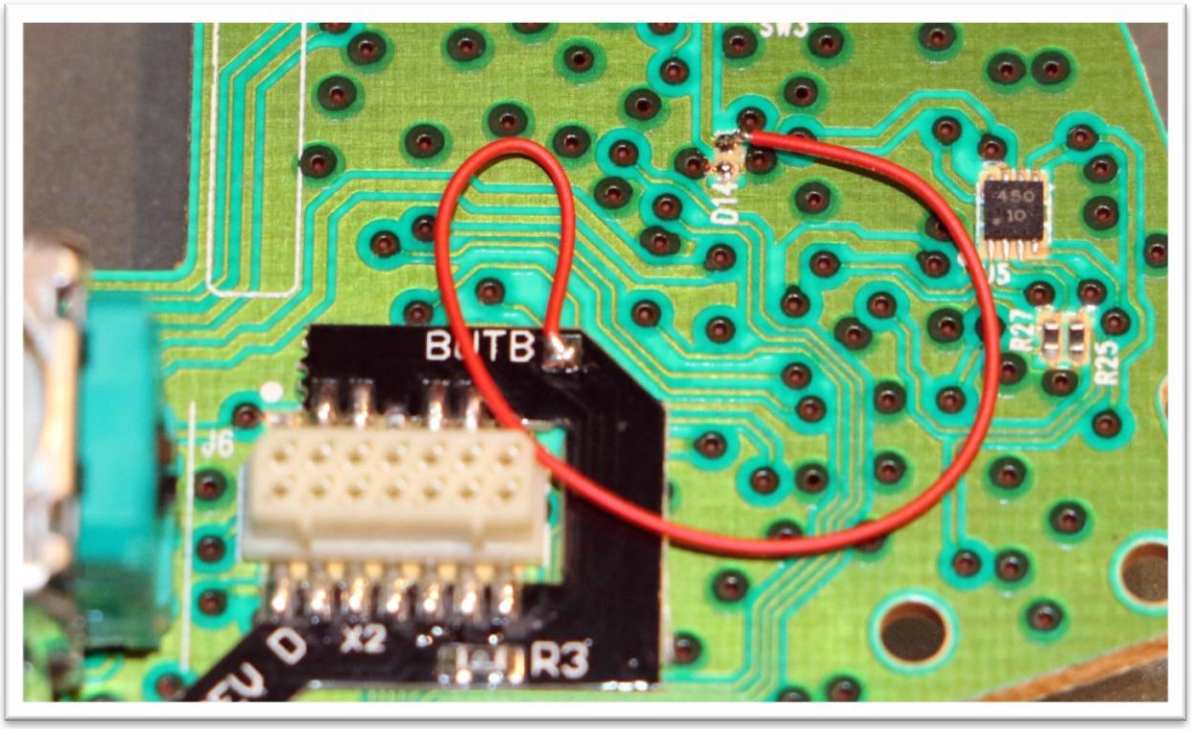
Install the modchip

Visually line up the mod chip so that the small pads match up nicely with the small “feet” on the black rectangular headers. You will be soldering the mod chip to the black rectangular headers.

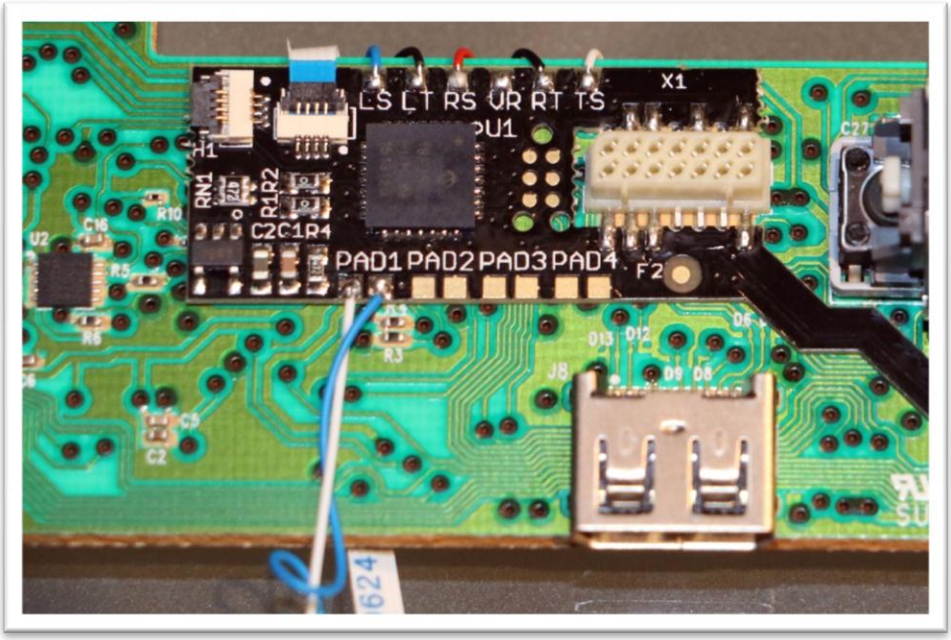


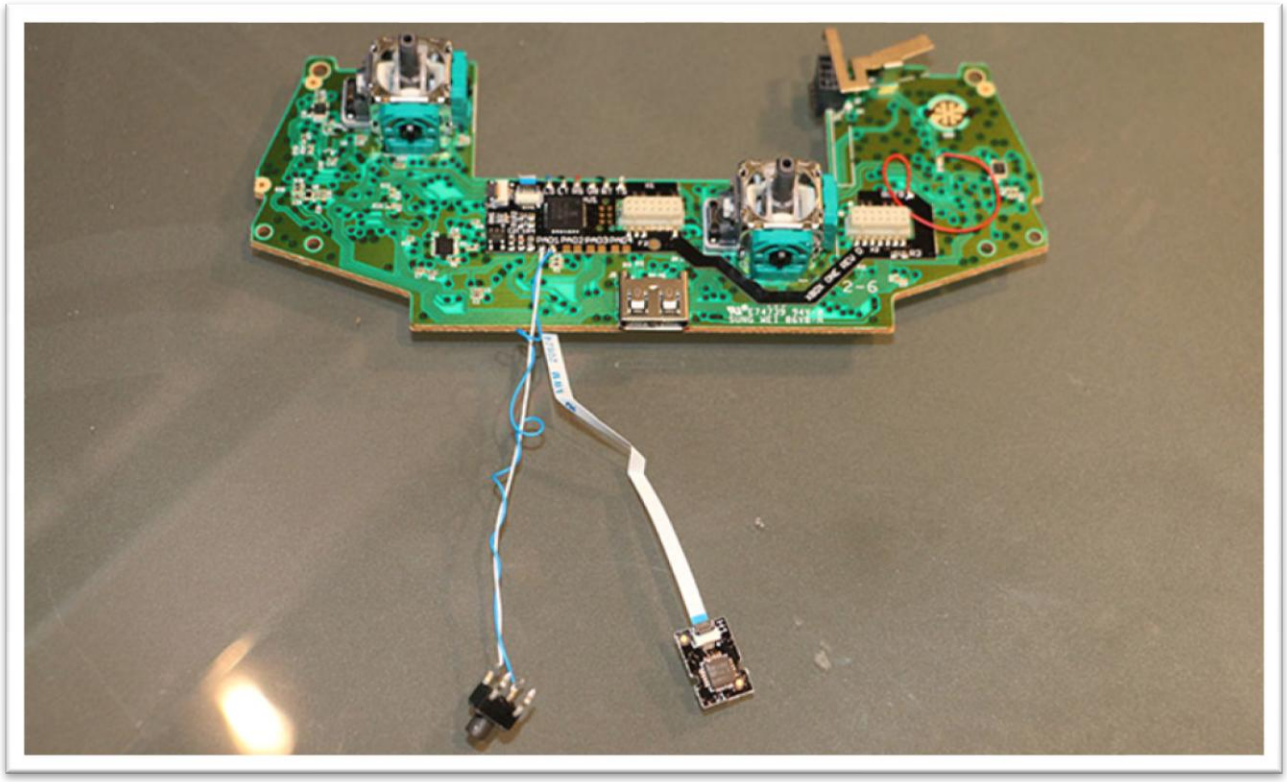
Use the soldering iron to solder one pad to one “leg” of the header at a time. Be sure to only solder one or two feet on the “left” black header, then move to the right header to make sure everything still matches up. If you solder all the feet on one side first, then move to the other side, you may find out it doesn’t match up.

Install a small wire jumper from “BUTB” on the mod chip to the upper-most wire pad above the “D14” marking on the Microsoft circuit board.



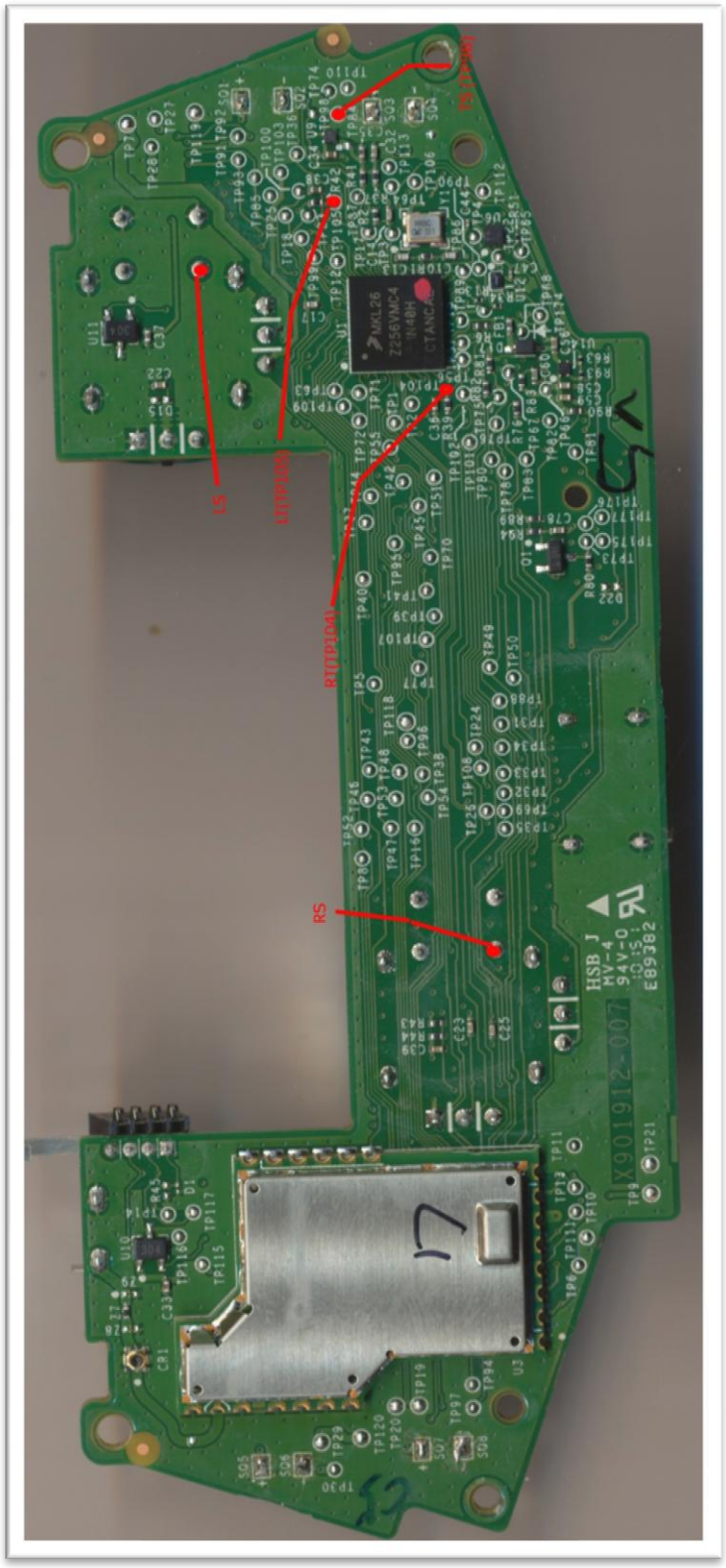
Insert the 4-position ribbon cable into either the H1 or H2 port. Solder five wires onto the following pads: LS, LT, RS, RT and TS. Also, solder a pair of wires from PAD1 to the mod switch. Wrap the wires for LS, LT, RS, RT and TS around to the other side of the boomerang circuit board. Wrap the 4-position ribbon cable around to the other side of the boomerang board as well:

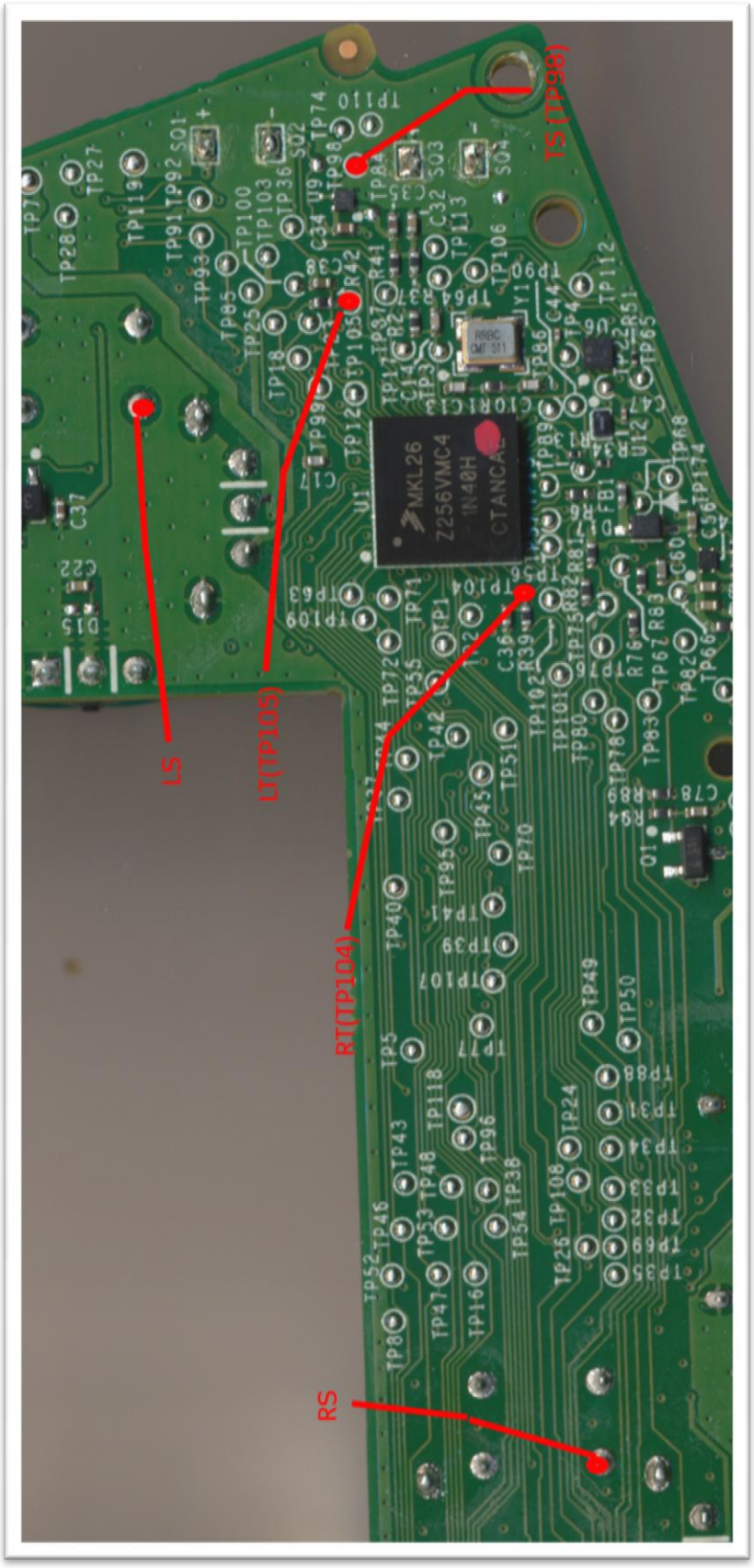




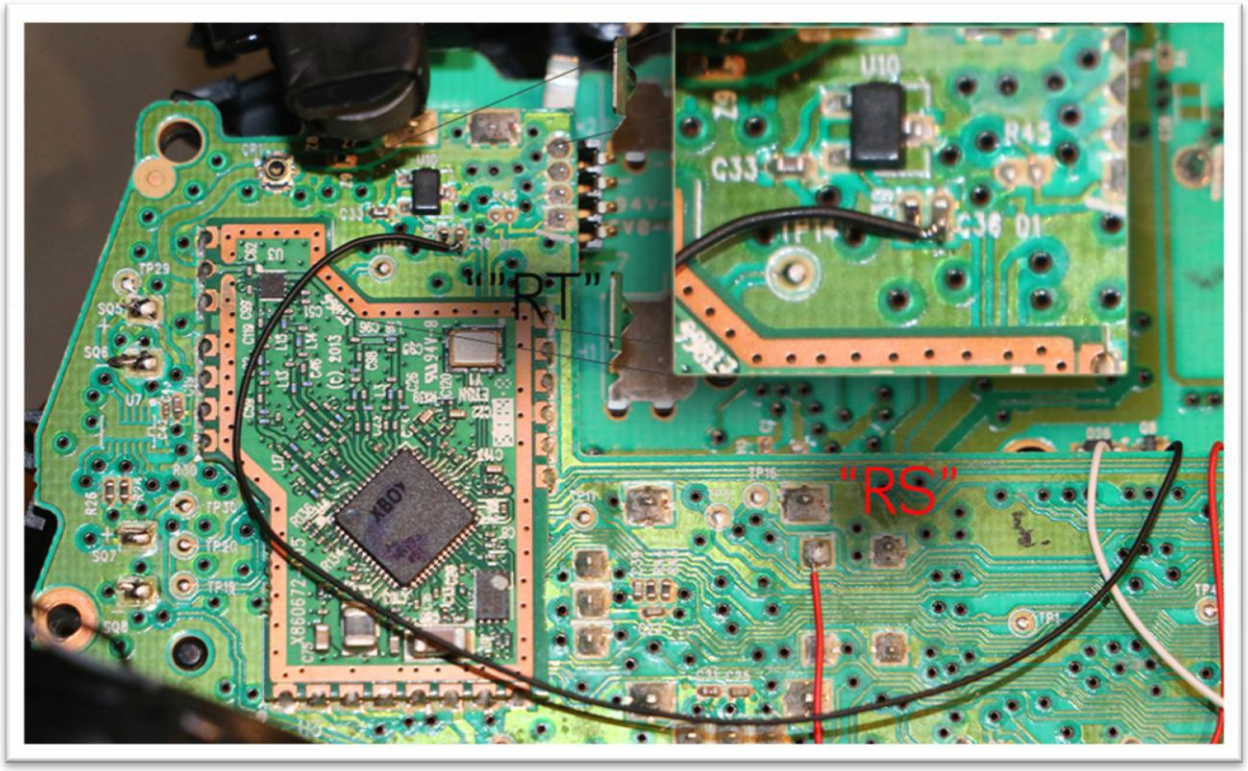
Flip the Microsoft “boomerang” shaped circuit board over and install it back into its original location. Re-install the two Torx 6 screws into the Microsoft circuit board.

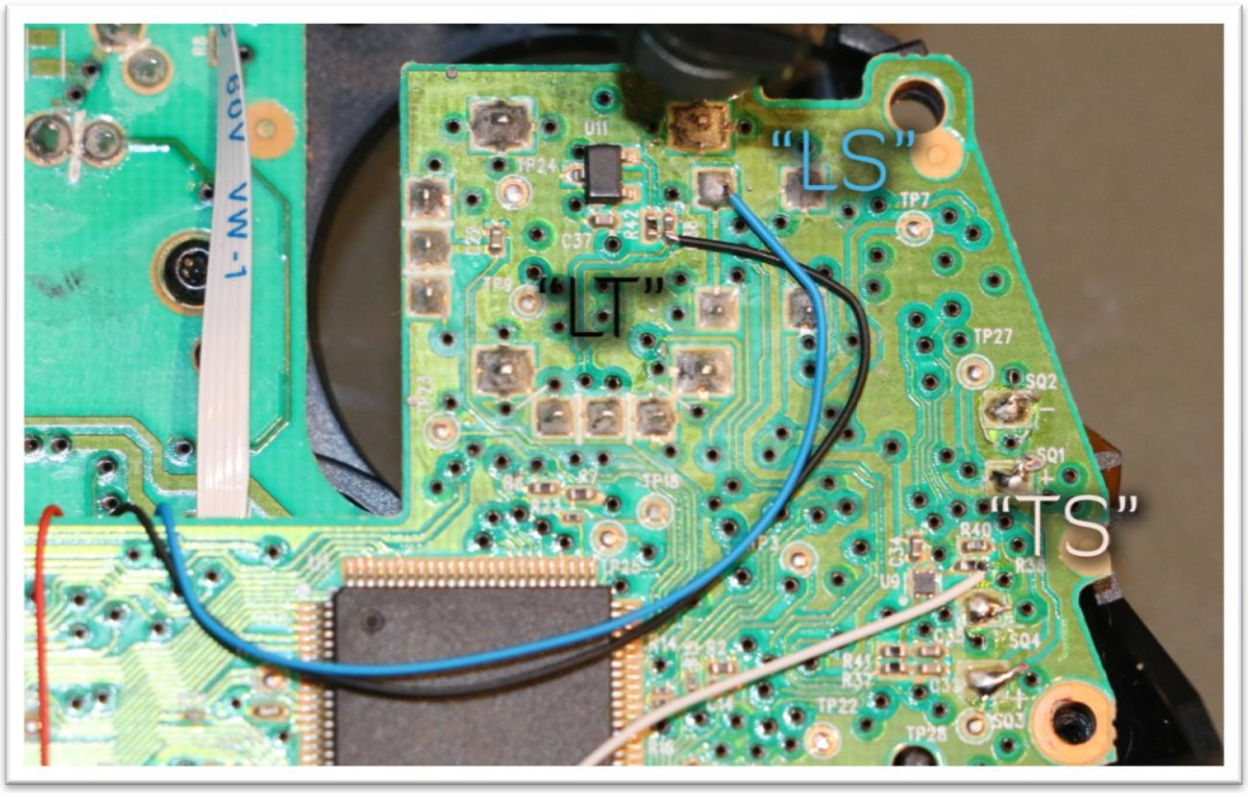
If you have the “3.5mm headset jack” version of the XBOX One controller, then use this diagram below to determine the solder connection points for the RS, LS, RT, LT, and TS wires:




TS (TP98)
LS
LT(TP105)
RT(TP104)
RS

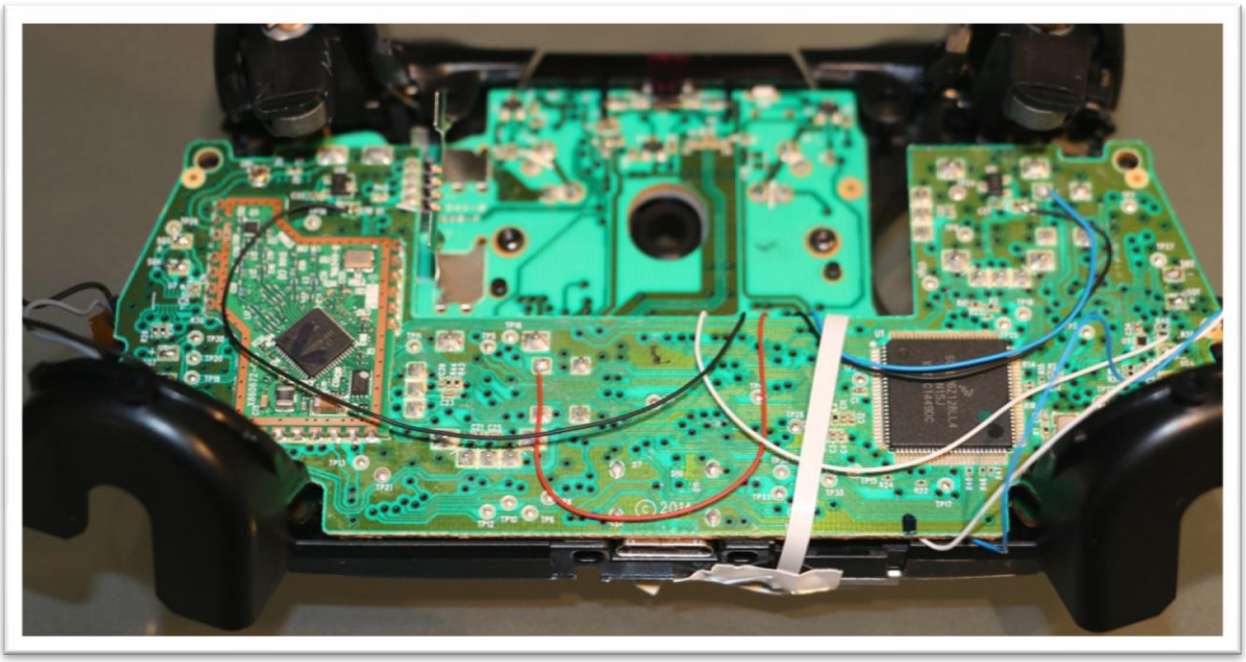
If you have a non-3.5mm headset jack version of the XBOX One controller, then use the following photos to determine the solder connection points for the RS, LS, RT, LT, and TS wires:

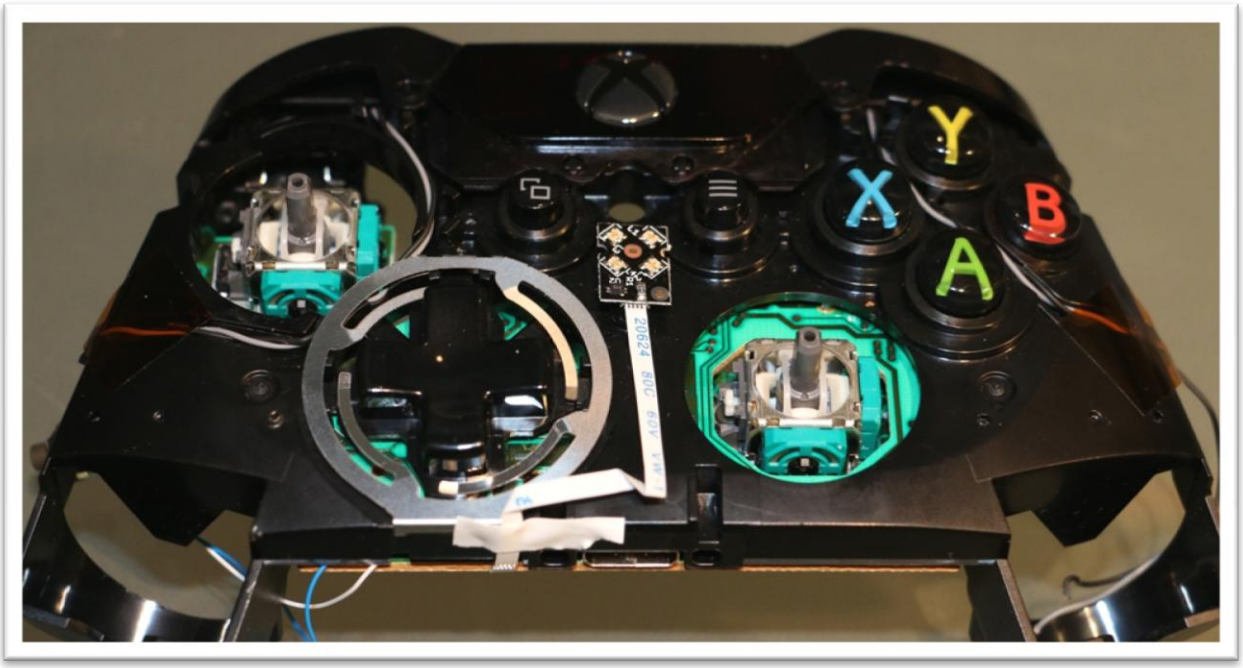




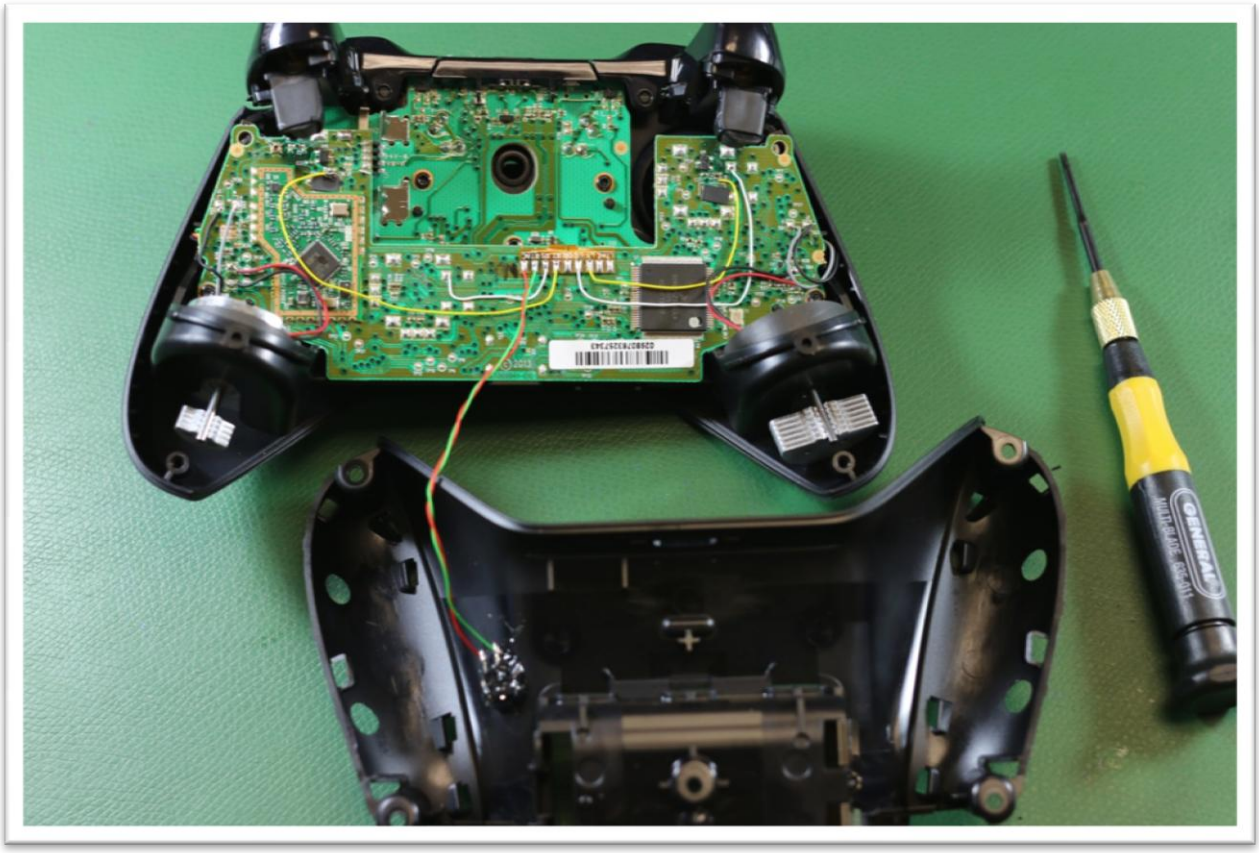
IT IS IMPORTANT that the wires that are installed do not interfere with the function of the trigger stopping on the small square rubber pad. Be sure to route the wires such that the triggers have free and clear movement.

Route the 4-position ribbon cable around any obstacles and connect it into the LED driver board.



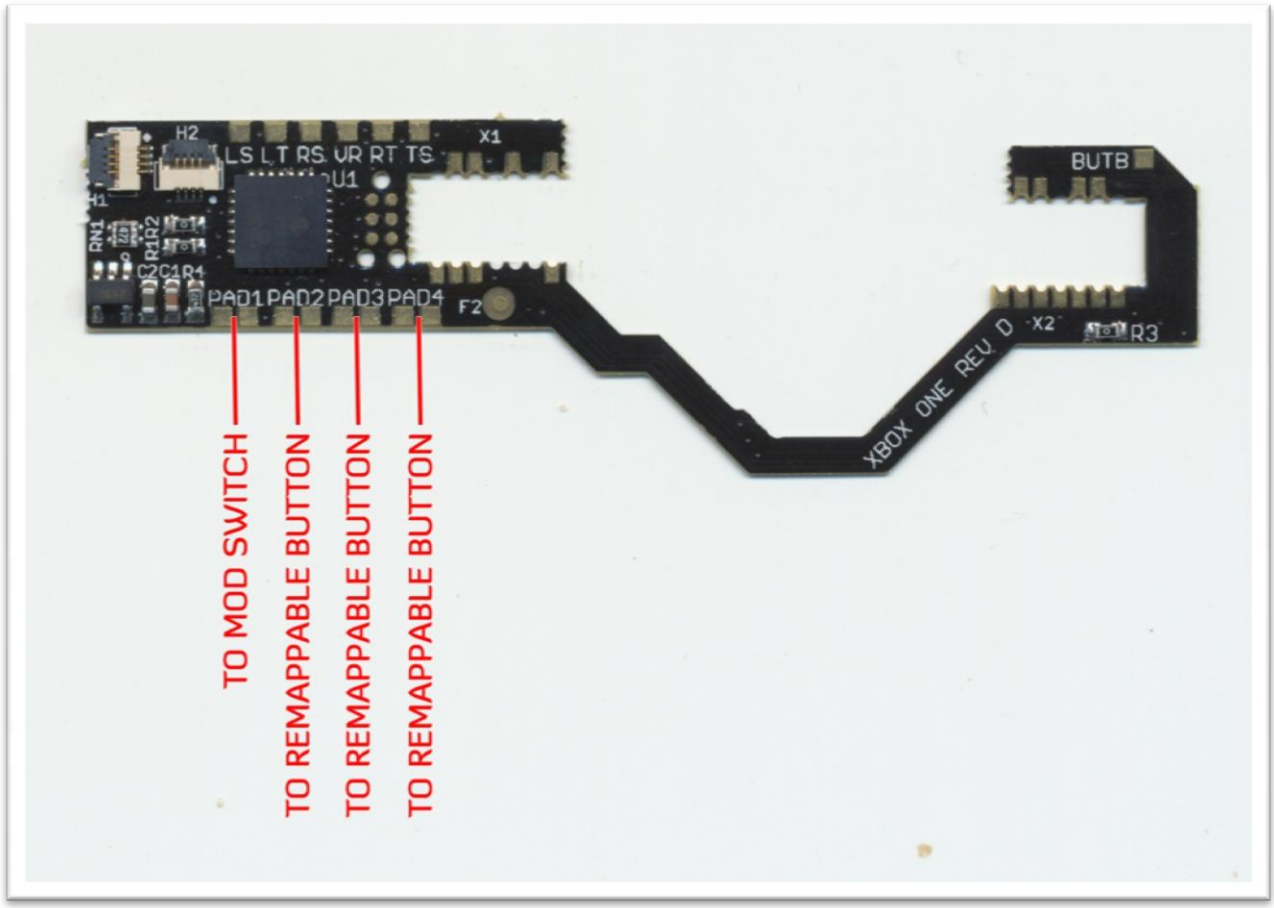


Attach the "PAD1" wire pair from the mod chip to the mod switch that was installed in the back half of the shell.



Connecting Re-mappable Tactile Buttons

You may connect many up to three additional tactile buttons to the modchip, and these tactile buttons may then be used as programmable remapping buttons. The photo below shows “PAD2”, “PAD3” and “PAD4”.



Put the controller together

Install the faceplate and back half of the shell. Be sure to keep an eye on all wiring harnesses and route them such that they are not pinched or short-circuited as you close up the shell. Re-install the five screws into the back half of the shell. Re-install the handle covers.

Your XBOX One controller is now modded! Please note that the controller MUST be sync'ed to a console before any of the mods will work.

First Power-up (Lock/Unlock)

Note: It is extremely important to follow this section. Failure to initialize your modchip properly will result in permanently disabling some or all of your mods.

These modchips are designed for re-sale by mod shops. When you first power up the controller, all four LED's will show red. The mod is waiting for you to start a "lock/unlock" sequence. By default you will want to UNLOCK ALL MODS.

Tap the mod switch one time to begin the lock/unlock sequence. The Player 2 LED will turn red. Now hold down the Y button. You should see a series of LED blinks, with green LED blinks in between. This is the modchip unlocking all mods. When the sequence is complete all LED's will go out.

If you don't follow these instructions, some or all mods will become locked and this is irreversible.

Once you've tested all the buttons and unlocked all the mods, you're ready to play!

Boot Into Special Test Mode

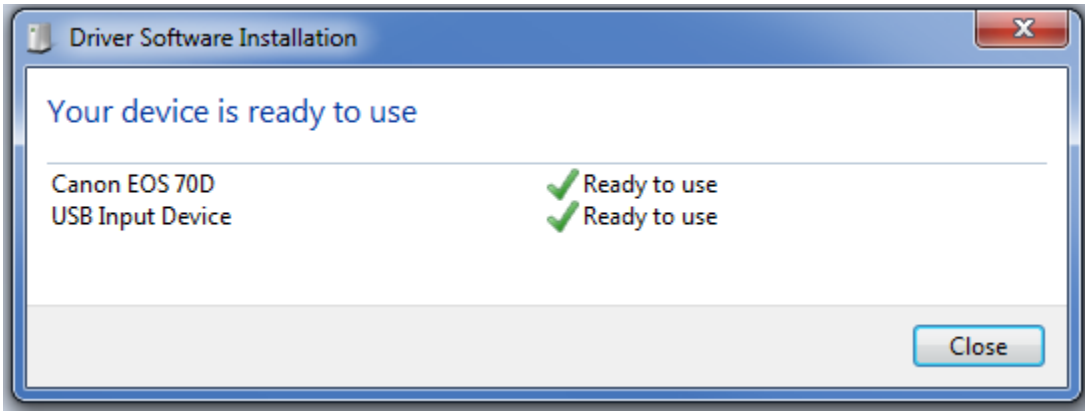
You may boot the controller into a special LED and button test mode to verify that all the buttons are working properly. To do so, begin with the controller powered off, then hold L1 (Left Bumper) + R1 (Right Bumper)+ Mod Switch while powering up the controller. (Be sure to continue holding that three button combination for several seconds after the controller powers up).

The controller will play back all the available colors on the LED indicator and then start a button test. During the button test, the LED's will blink a certain number of times to correspond with each button press. Here are a list of button presses:

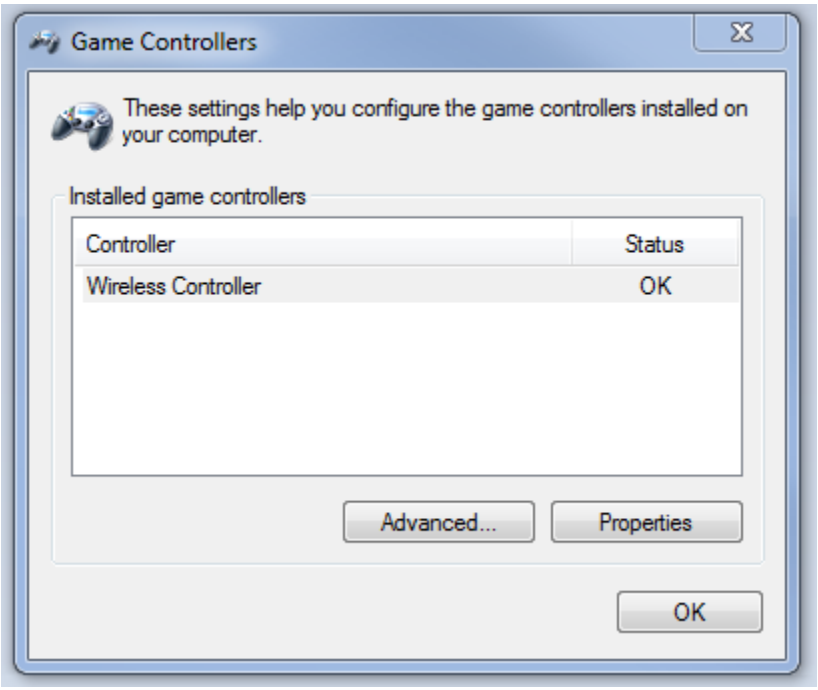
Button	**Number of LED Blinks when pressed**
D-Pad Up	1 quick blink
Right Stick Center	1 regular blink
D-Pad Left	2
Left Stick Center	3
D-Pad Down	4
Triangle Button	5
Left Bumper	6
D-Pad Right	7
Right Bumper	8
Square Button	9
PS Home	10
X Button	12
Circle Button	13
Right Trigger	14
Left Trigger	15
Mod switch on TAC1	16
Tac switch on TAC2	17
Tac switch on TAC3	18
Tac switch on TAC4	19
Tac switch on TAC4	20

Test the Controller Through Windows

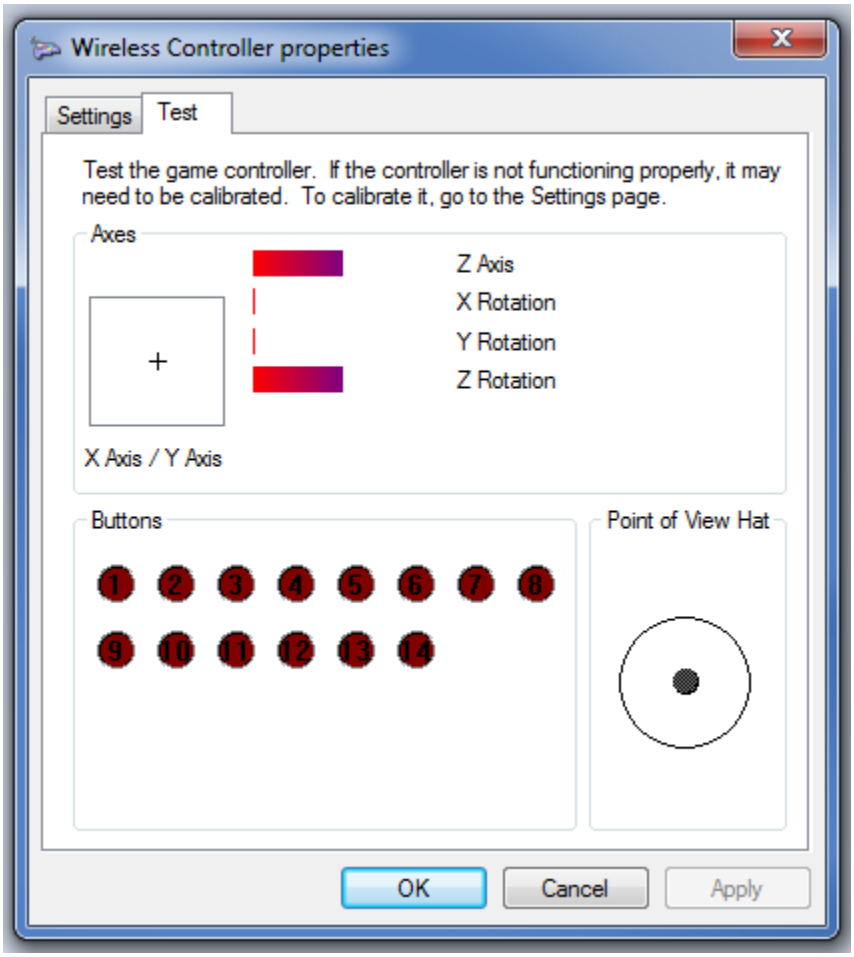
The XBOX One controller can be connected to a Windows PC. In order to connect, you must download the official Microsoft Windows drivers for the XBOX One controller. At the time this manual was written, the drivers could be downloaded at this link: http://support.xbox.com/en-US/xbox-one/accessories/controller-pc-compatibility



Once the drivers are installed, on Windows 7 for example, connect your controller by USB to your computer, and then type “Set up USB game controllers” into the search bar to launch the Windows native game controller tool.



The tool can be used to check that all button presses are functioning properly.



Once all button presses have been confirmed working and mods have been tested, it's time to play!