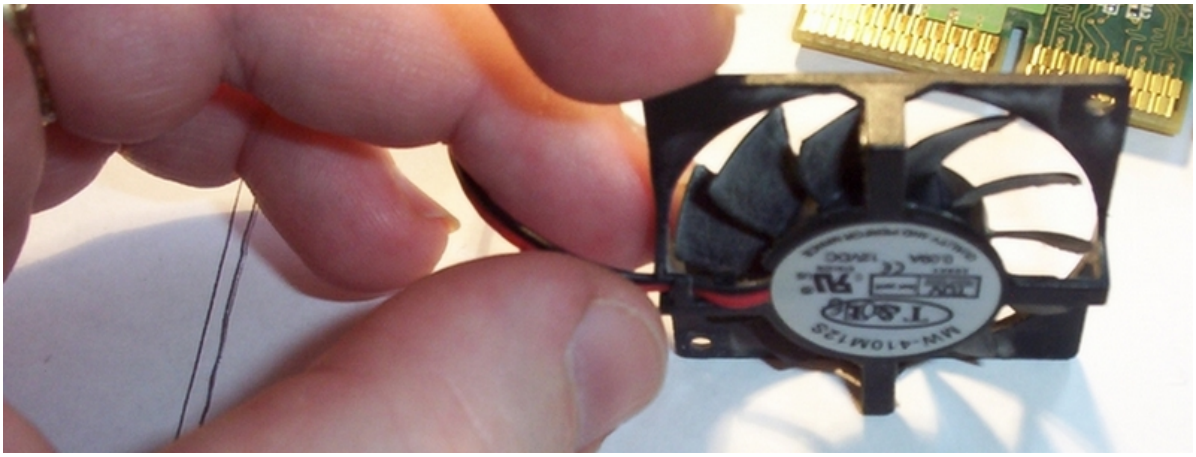
Fan

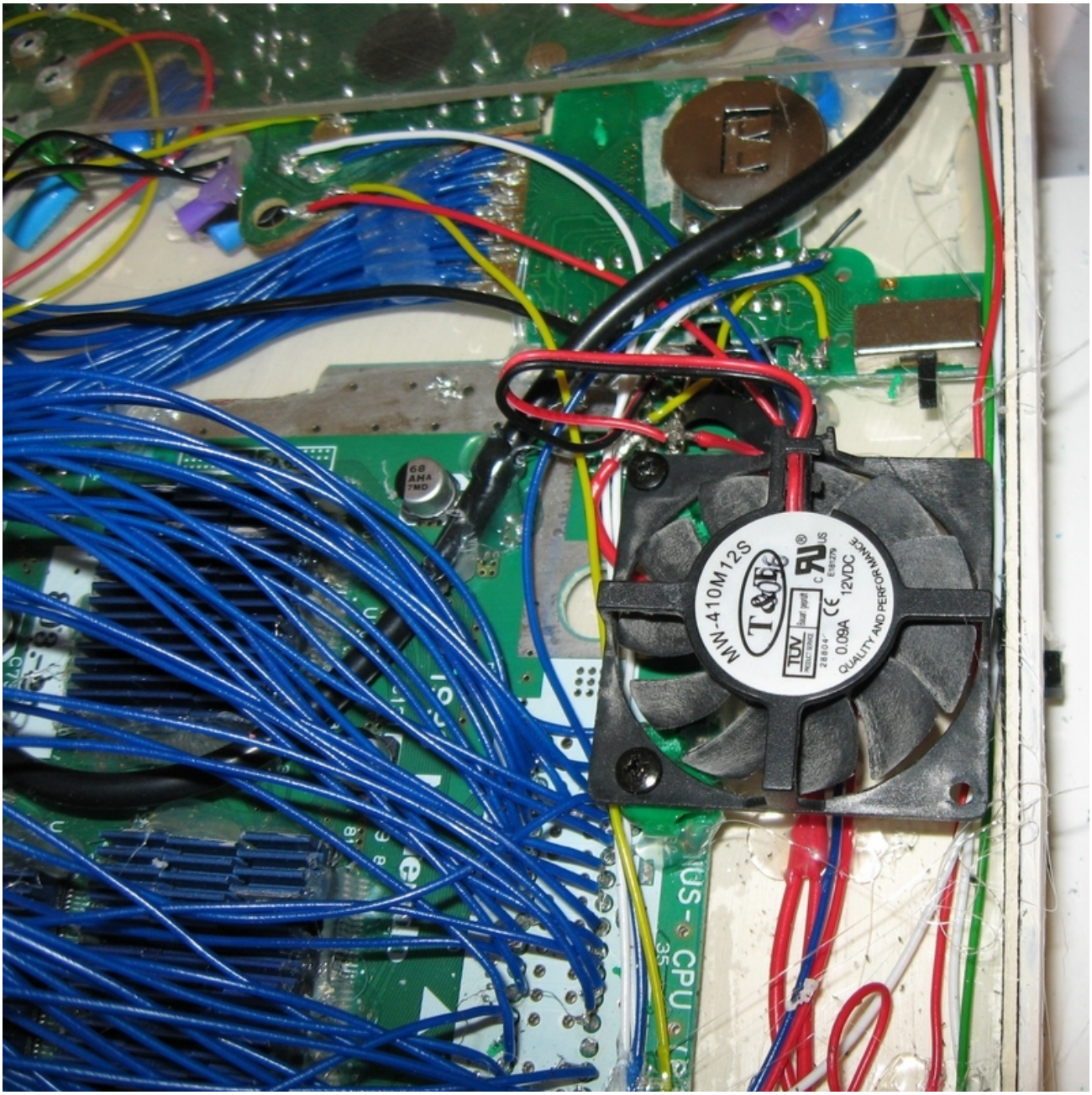
There is no point to using heatsinks if there is no way to remove the warm air, hence the reason to use a fan.

You can use a fan to suck out the air from a case or to blow air in. Personally, I prefer to suck air out as it will encourage less dust to settle in the system over time and probably gives better airflow. Your case needs to be airtight for best results, in my system, I take advantage of the fact that there are small gaps between where the game cartridge and cart slot are; so air comes in here, over the Expansion Pack and its heatsink, over the N64 mobo, out through the fan.

You can buy fans easily, you really want one 40mm x 40mm, as quiet as possible and as slim as possible. As height is an issue in my system as I wanted it to be as slim as I could, I needed a very slim fan. I found one on an old PC graphics card.



Mounted in case, using some plastic as screwposts (to stop the fan catching on the wires and board underneath):

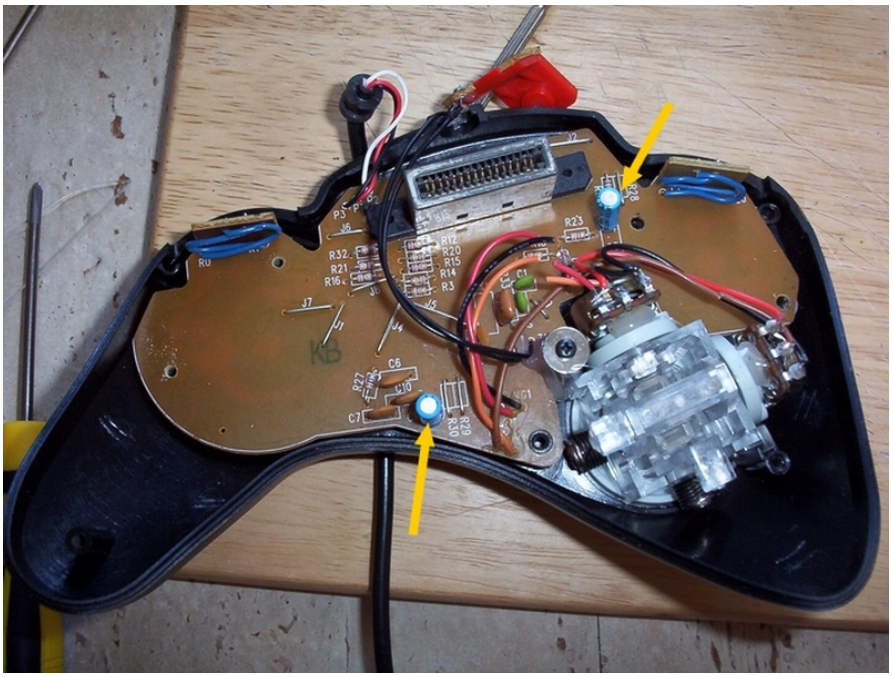


Controller, Memory and Rumble pack

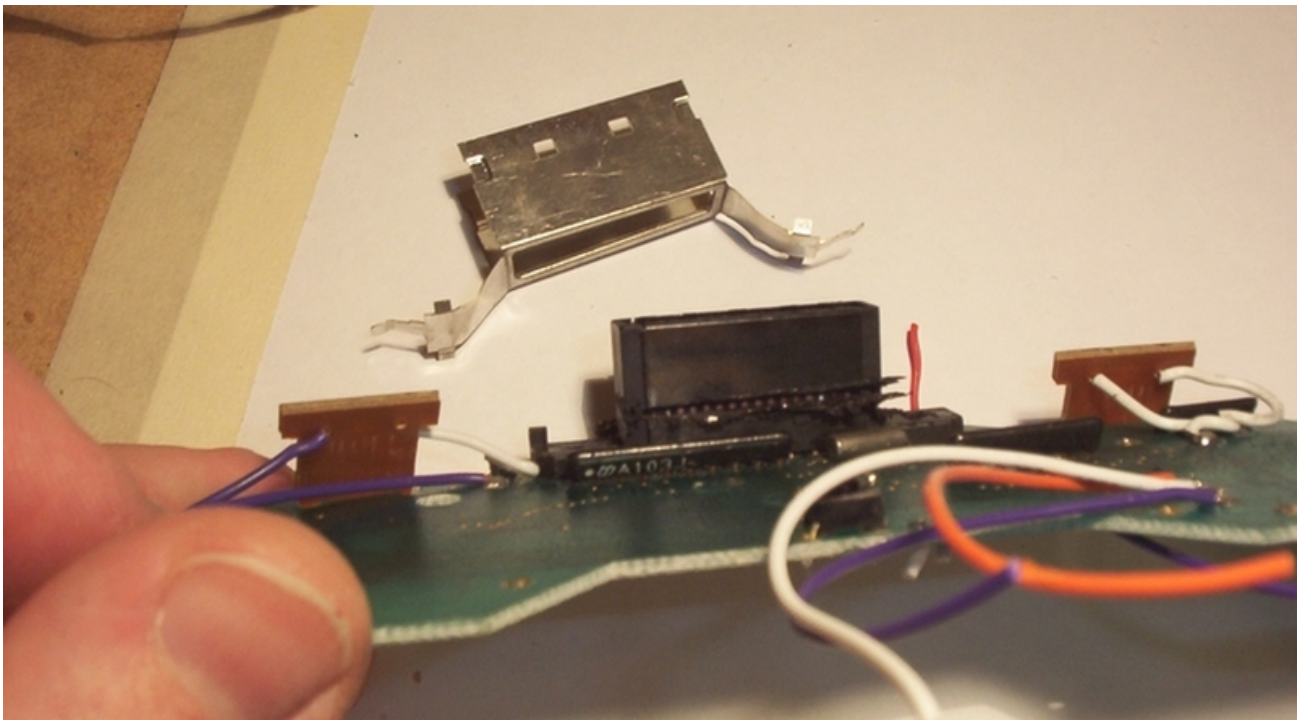
There are many N64 contollers, you will need to use a third party joystick so a generic joystick pot can be used (see "Modded Components" under joysticks for details, and how to wire them up). If you get a first party controller or a third party controller with the dark grey enclosed rough triangle type shaped joystick (other give-away is that they have one blue and five white wires connecting to the joystick), you have to use that one in your system; however most third party controllers don't use this type of joystick, so you can use alternative joysticks; see the joystick section in Modding Components.

I like to use the SuperPad (or MakoPad 64) as the joystick is flat, very nice to use; the buttons are flat and the surround too.

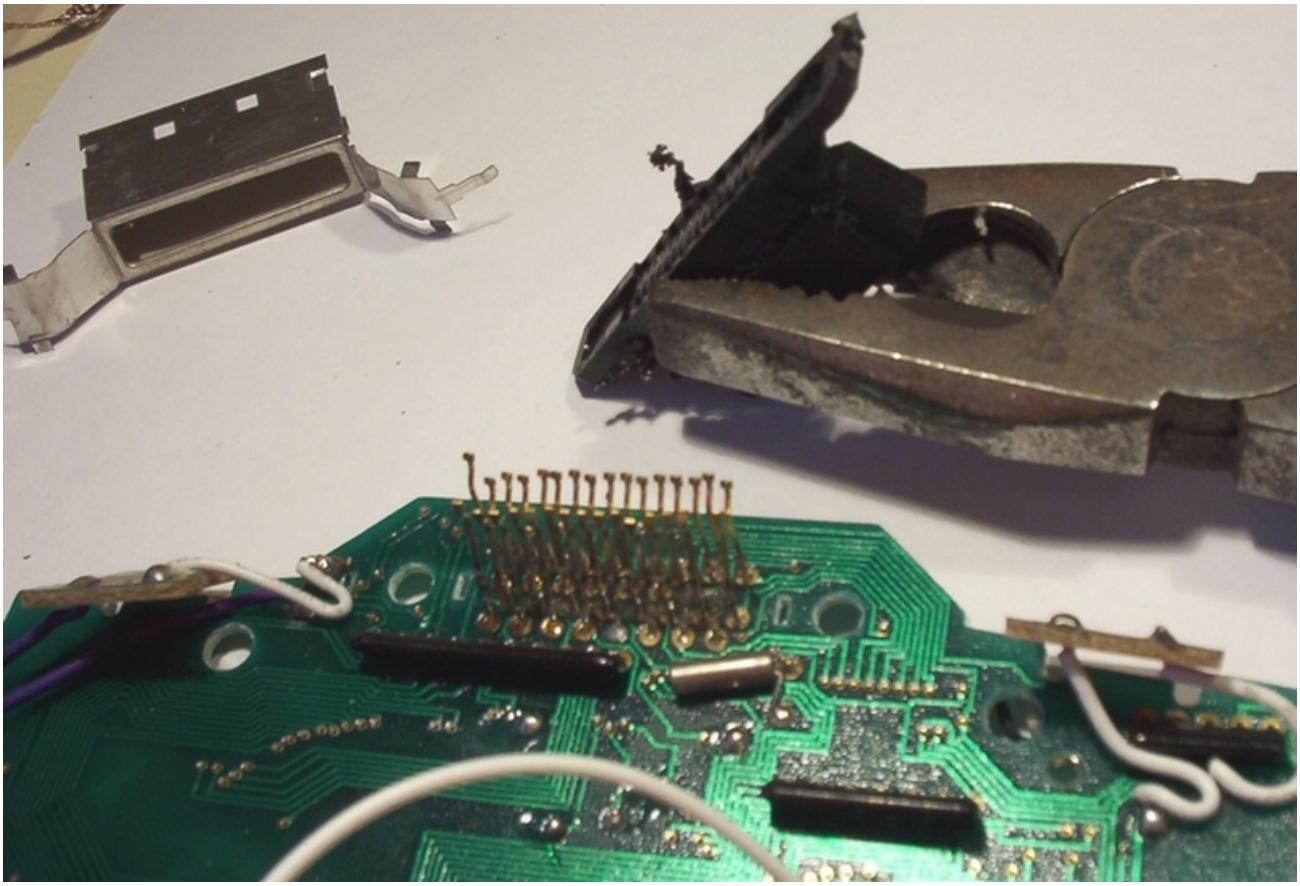
Opened up, joystick wires snipped (using a far smaller one), arrows point to the two large capacitors - desolder them and wire to board with longer wires so as to keep the system slimmer. (optional).

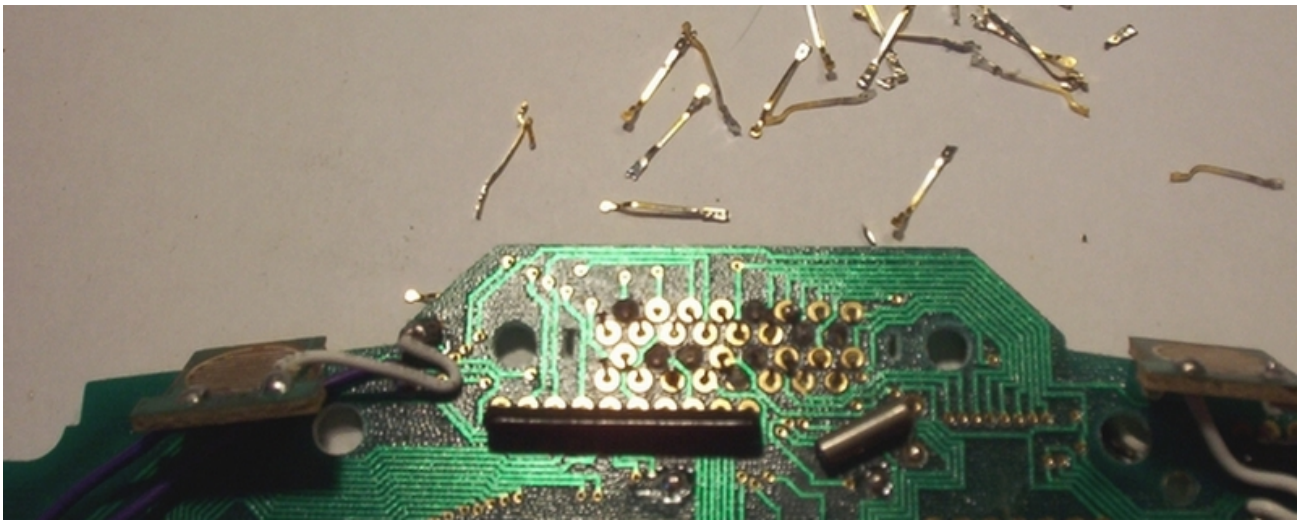


Remove the cart slot to hold the memory pack (saves game progress in many games, and also rumble vibration pack if used).

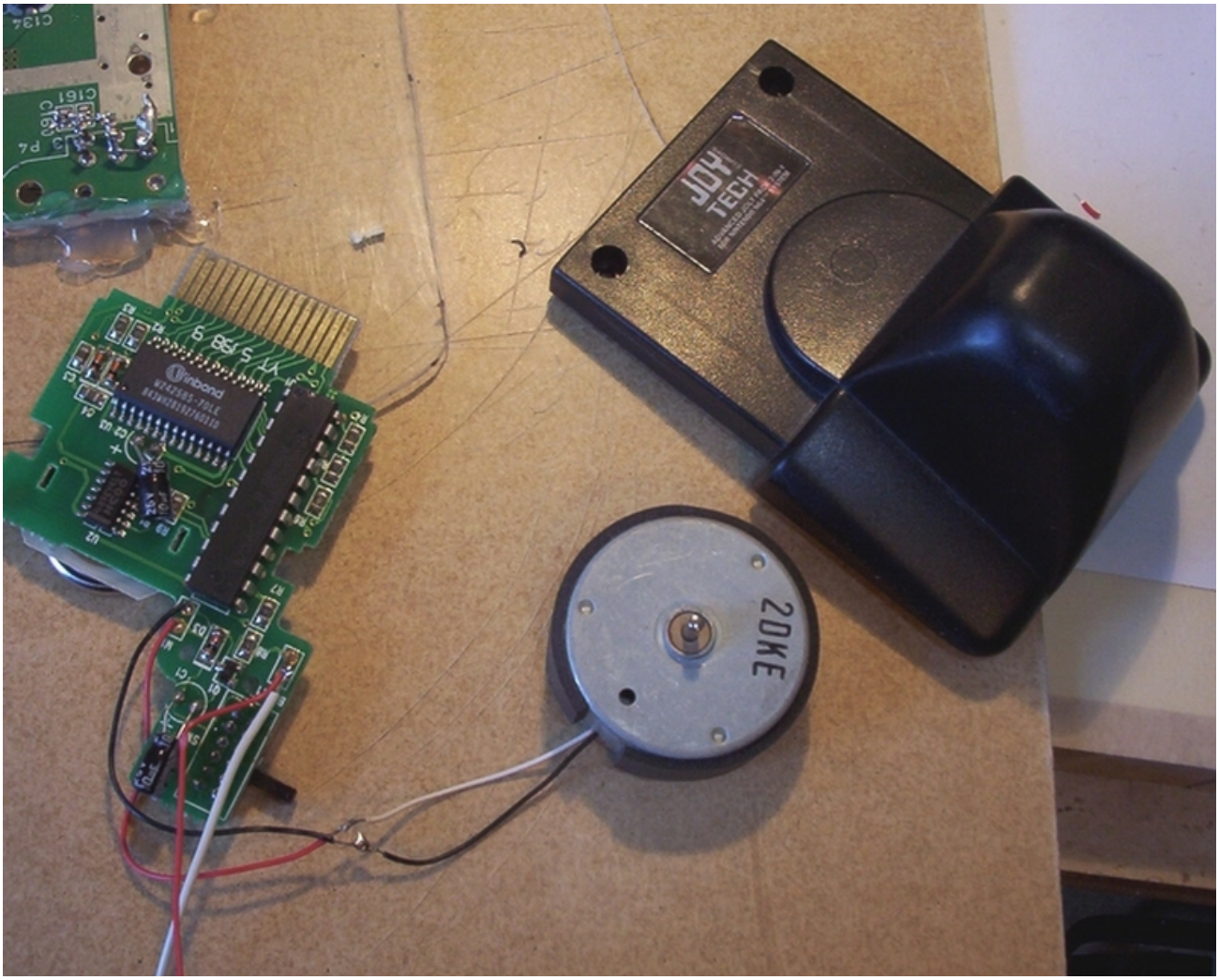


Pull off, and move pins until they drop off:

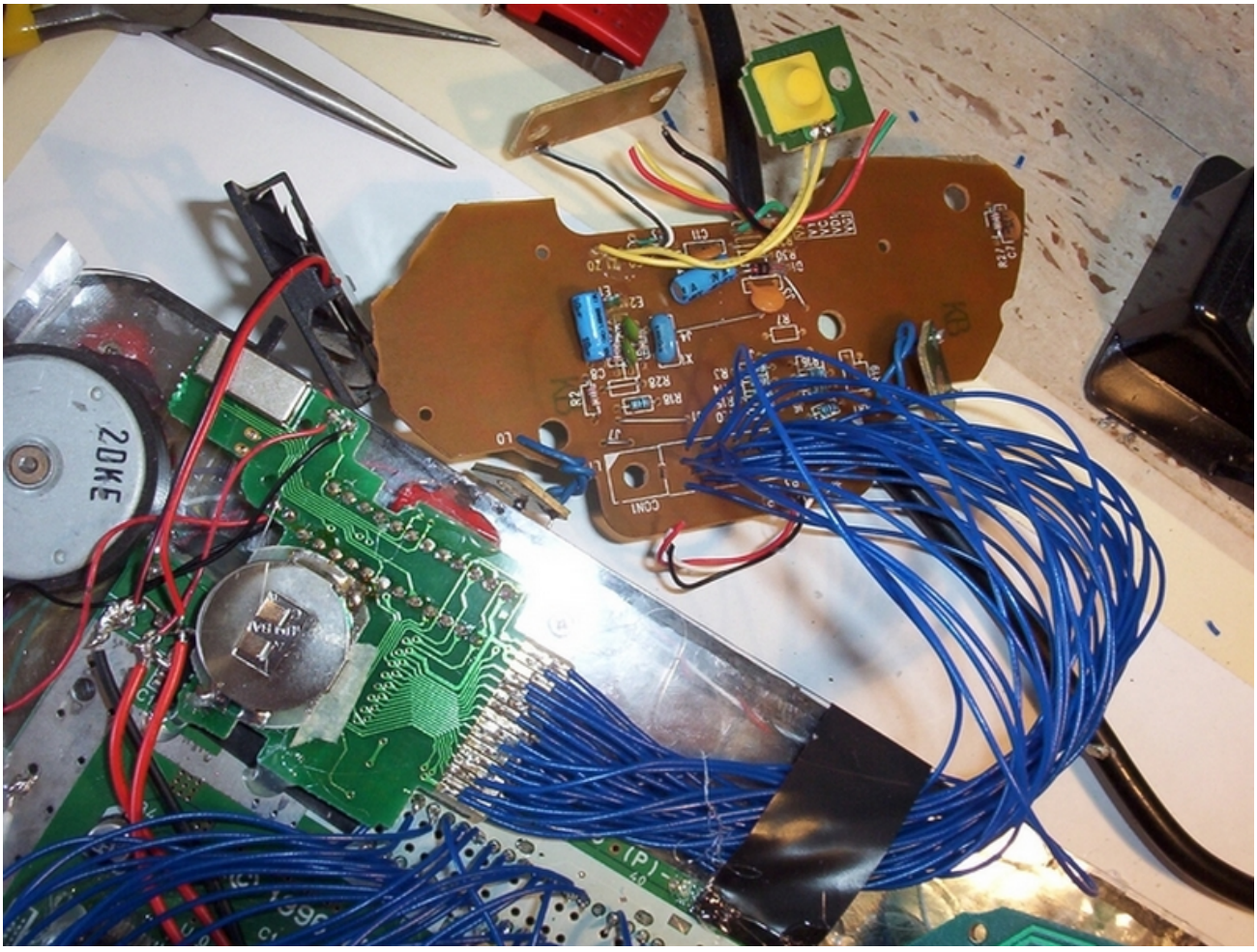




This JoyTech gadget has a rumble pack AND memory card built in. You can't run both at the same time, however there is a switch to alternate between the two features. The rumble motor in the JoyTech is not the one in the pic, I just wired it up to test it (from a GameCube controller - see "Modding Components").



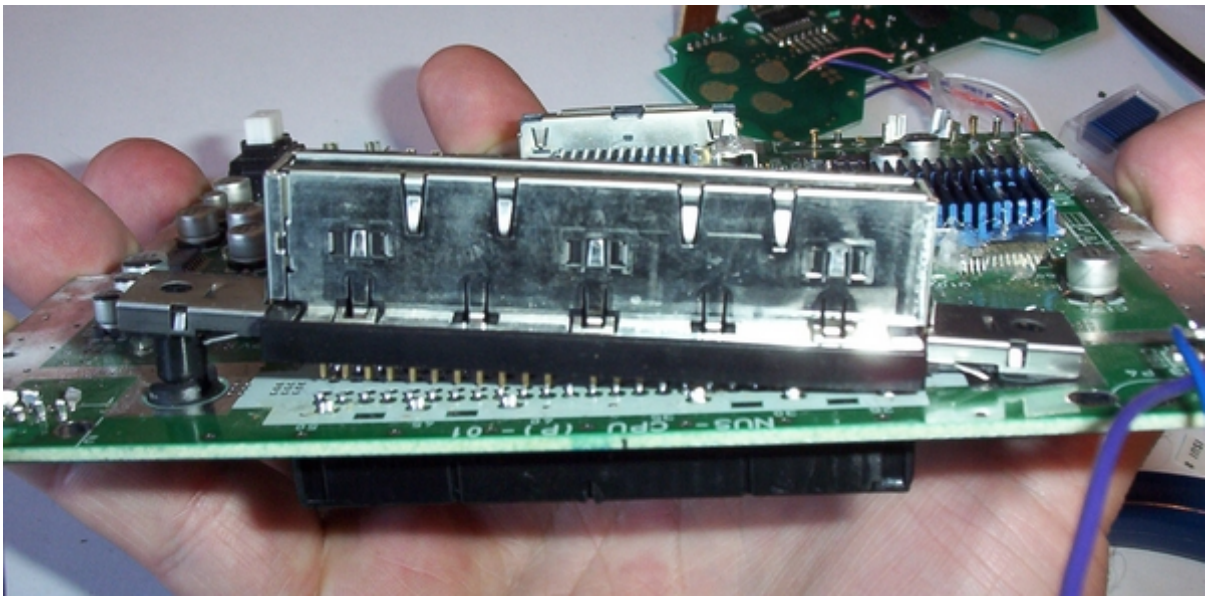
Make sure you wire the traces on the JoyTech to the right traces on the N64 controller. The side with the battery from a memory card faces the thick side of the N64 controller, the side without the battery (watch battery) faces the top (outer) of the controller.



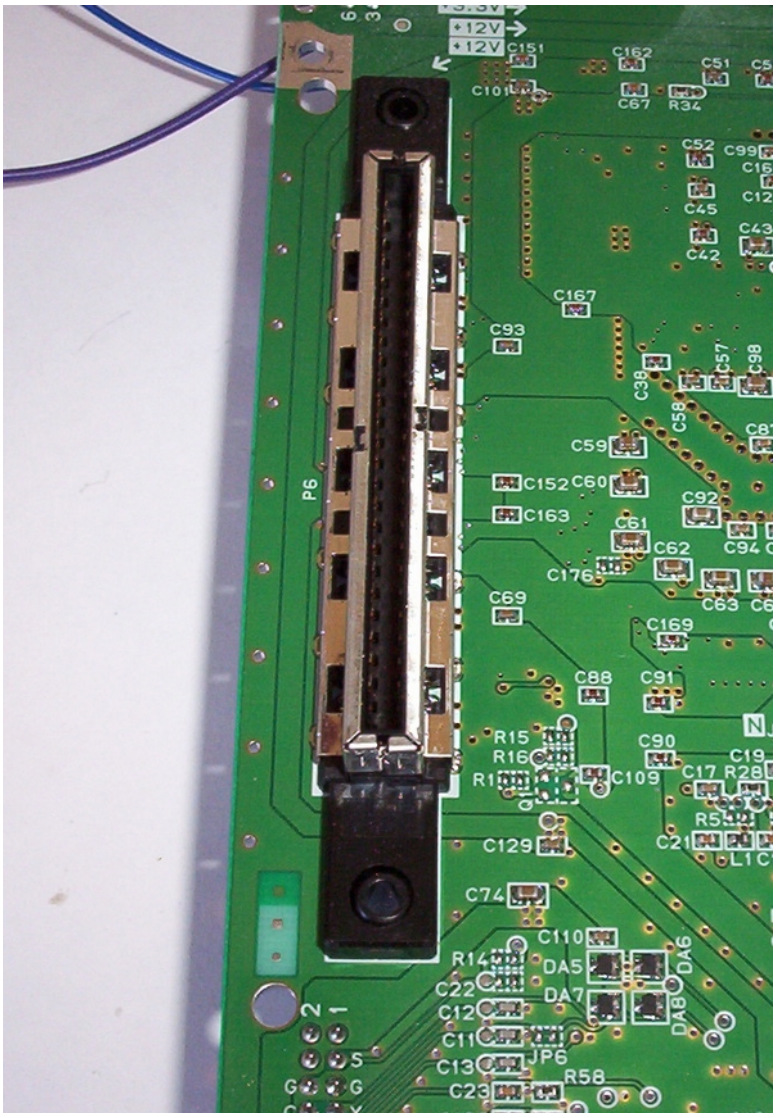
Relocating the cart slot

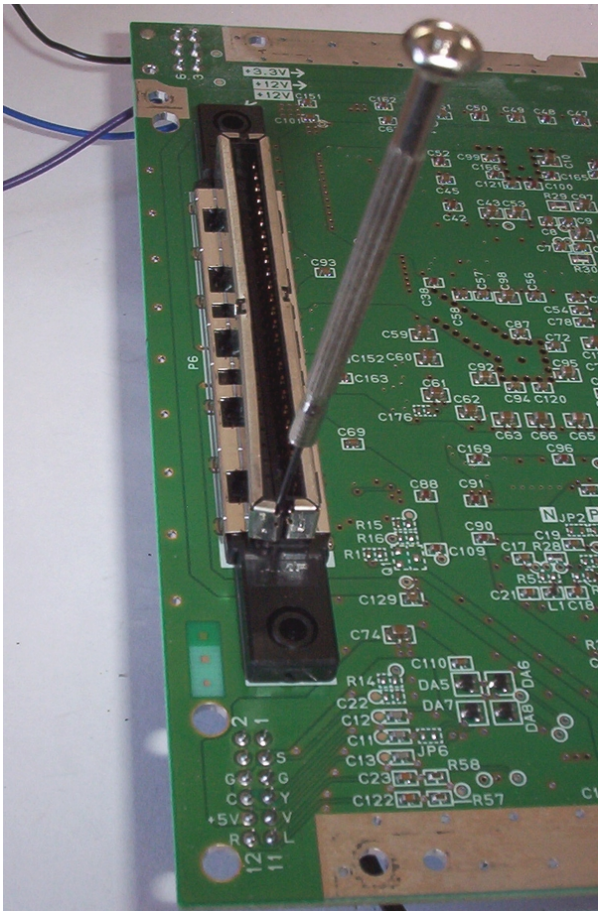
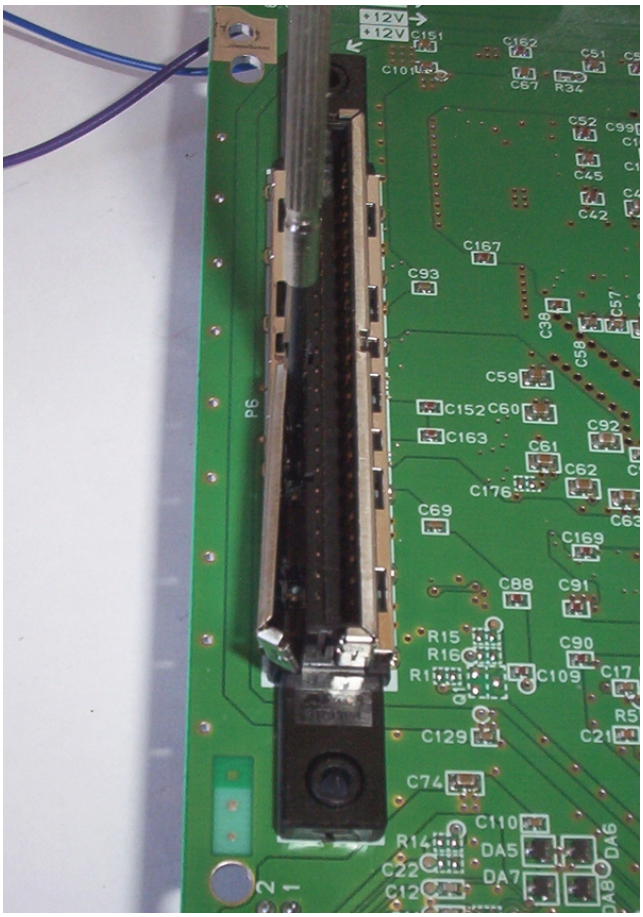
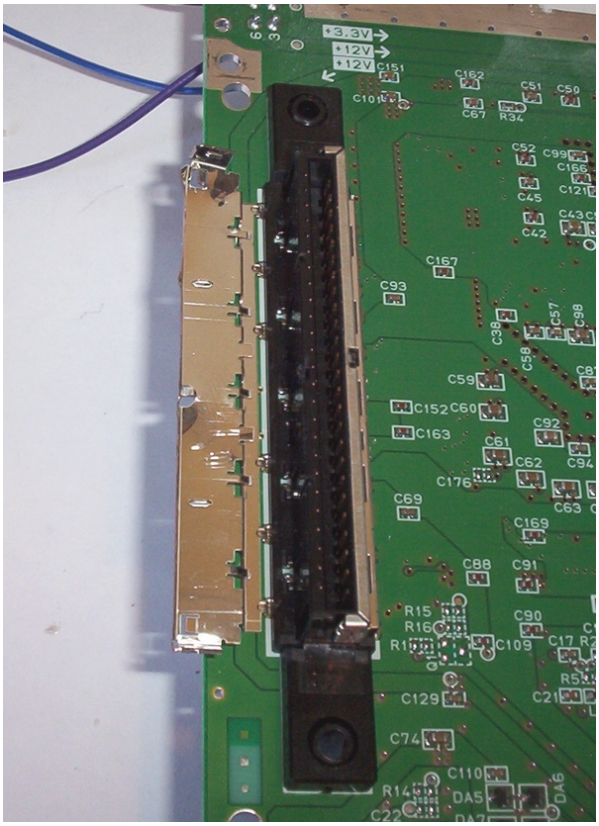
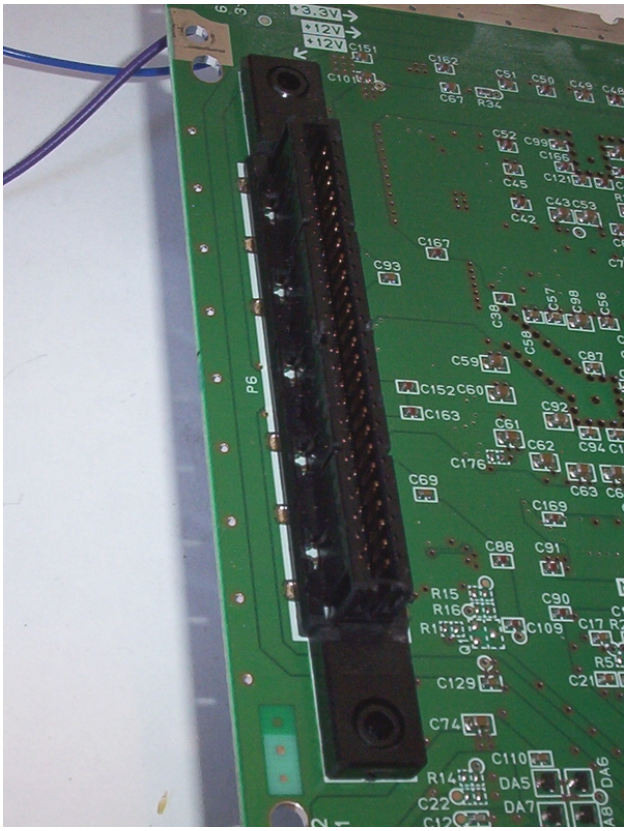
If you don't mind your game cartridge to stick at a right angle out of the motherboard in the position it is on the board, then you don't need to do this. Personally, inserting a game cartridge into a system horizontal to the mobo is far more preferable and allows you to decide where and how the game cartridge loads in your system.

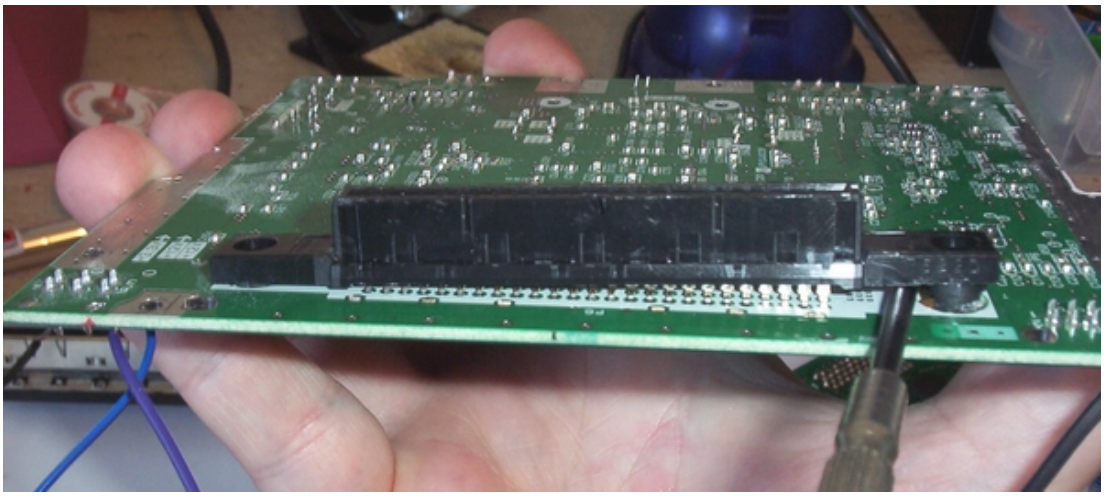
On the front of the mobo, you remove the old cart by lifting it off:

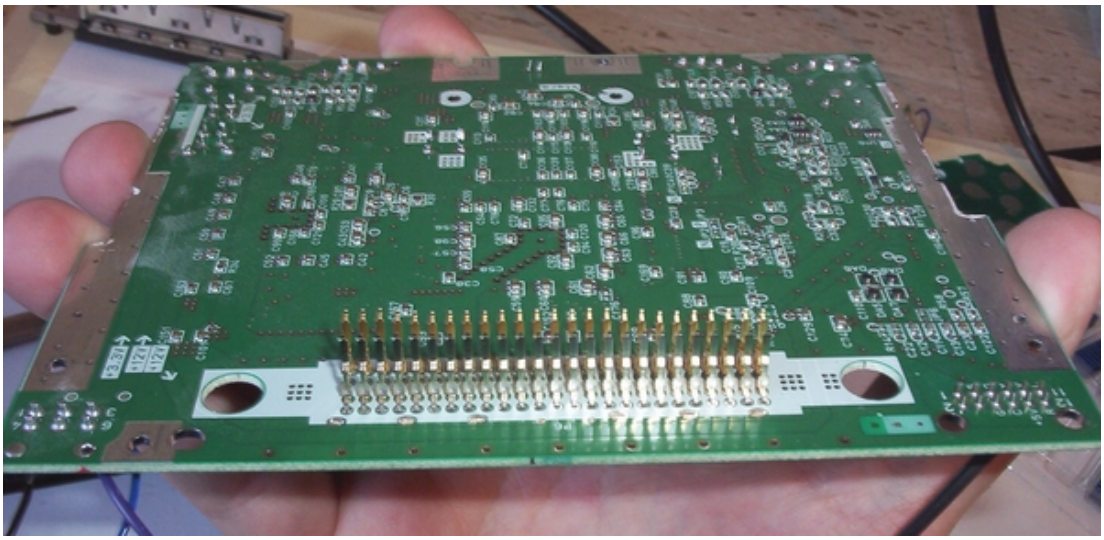


Turn the board over, to remove the add-on port (not used anyway).

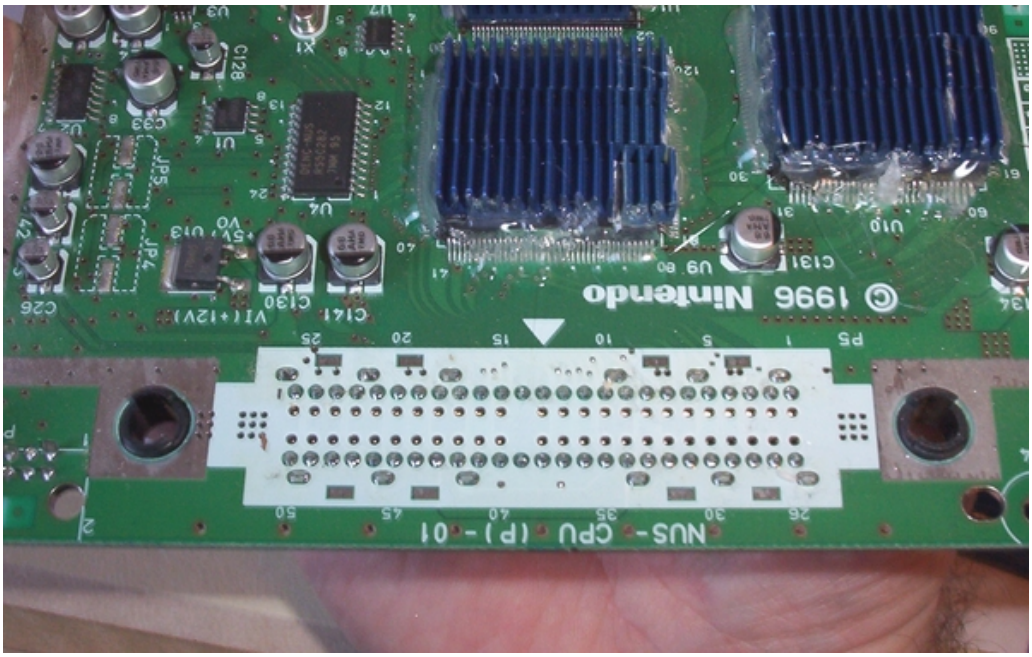


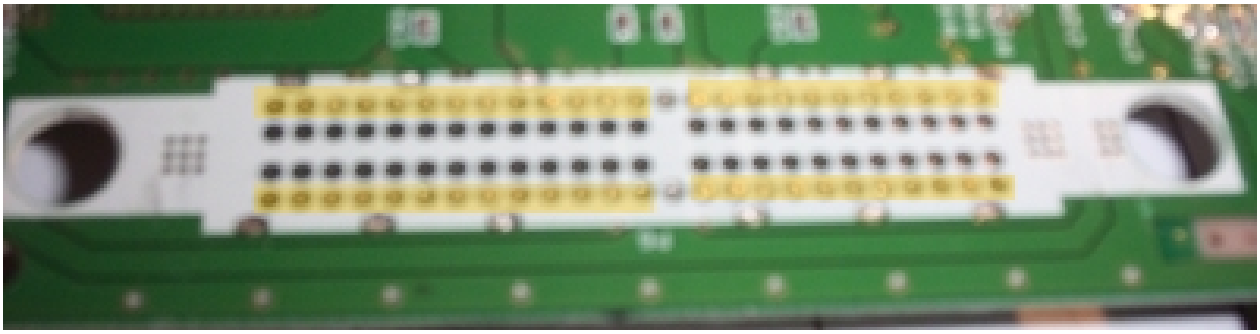




Move the pins back and forth to remove them. This is what you are left with (turn board over to front).



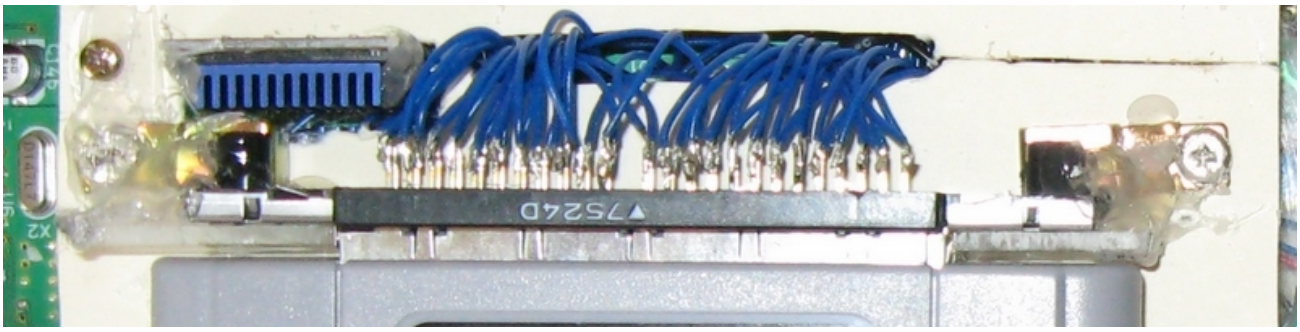
These are the pins of interest - the ones not highlighted is the space on the cart slot without pins:

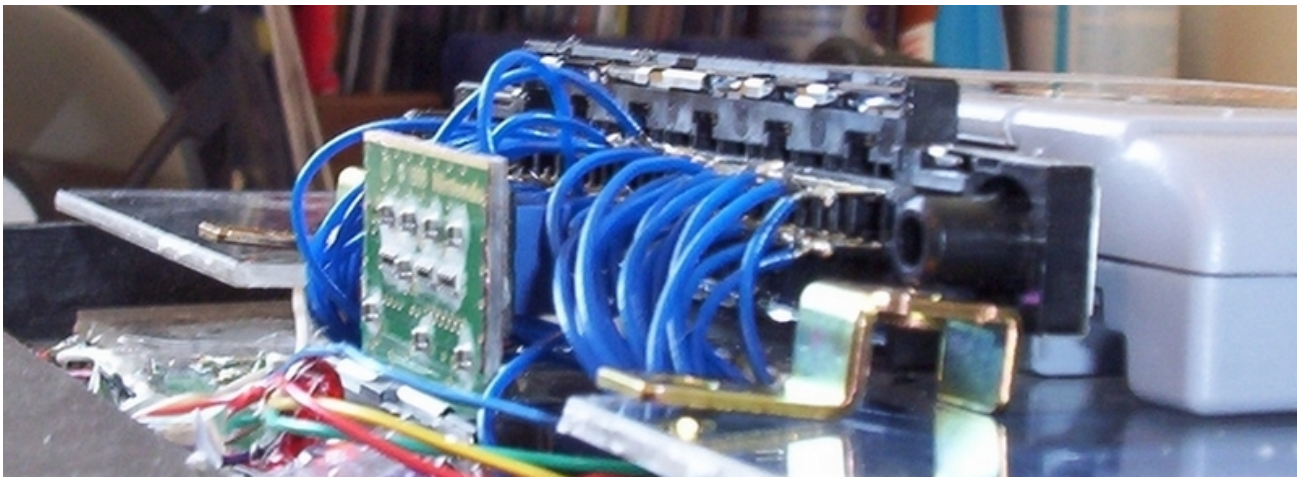


Then wire each solder joint to their corresponding contact on the cart slot. Make sure you don't wire it the wrong way around! NB - the cart slot itself has a serial code on it - that faces the front of the system (ie game cart front towards it).

When a case is made, the cart slot to take the game cartridges can be secured by screws and hot glue. In the pic below, you can see the Expansion Pack in place and can see how the airflow will cool it and enter the system via the hole for the fan to pull the air out.

Some people try to relocate the expansion pack, it can be done, but frankly, as you see in the pic below, you can place it alongside the cart slot relocated wires easily, so why bother?





Trimming the motherboard

You can trim off the silver sides (as long as there is still a thin strip) off both sides if you want, you can also wire the cart slot pins directly to the chip pins and thereby remove that section from the motherboard and can trim a little off the top and bottom if careful; but that is it. I tried to make the board smaller still, but the board didn't work as it relies on the resistance of some of the traces, and the jumpers for the internal clock timings and other workings.

Yellow are the easy parts to remove safely. Keep the pins under the video / power / controller ports and just wire directly to the places. The orange areas need more work but do-able if you are good with a multimeter and soldering.