# How to Modify the Tadao Board for Better Reliability and Use with the mQ-Valve

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This modification will modify the Tadao Board allowing the solenoid valve drivers to run directly off the 9v battery. Optionally, additional filter capacitors can be added for use with the mQ-Valve and improved low battery reliability.

The microcontroller on the board will reset due to brown out detection when the 5v bus is pulled too low by the solenoids that run off it. This is particularly bad with the mQ because it draws significantly more current than the MAC valve. Additional filter capacitors help prevent the battery voltage and 5v bus from dropping under heavy load.
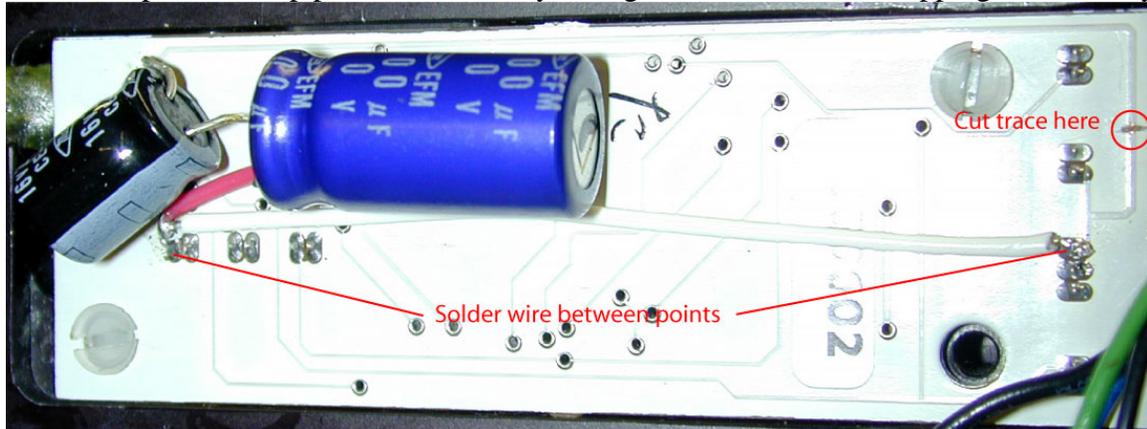
1. Cut the trace as shown in the above figure. This disconnects the 5v bus from the solenoid drivers.
2. Solder a wire between the two points indicated, connecting the solenoid drivers to 9v. Make sure there are no solder bridges connecting to adjacent pins.
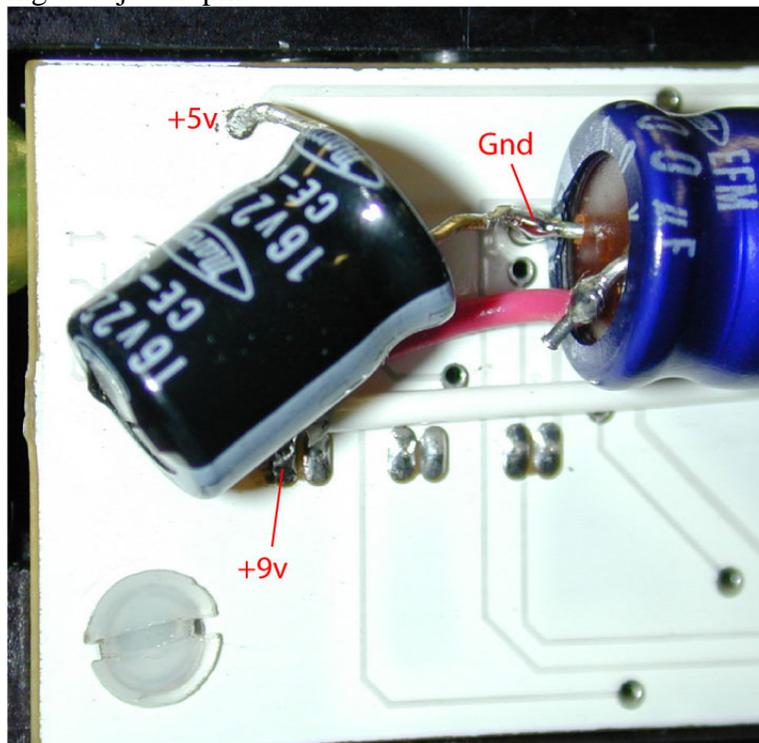
Optional: Connect filter capacitors between 9v and gnd and/or 5v and gnd. Bigger is better in this situation. Use the largest capacitors that will fit inside the grip frame. In this case 220uF was attached to 5v and 1500uF was attached to 9v. Glue the capacitors in place. Electrolytic and tantalum capacitors are polarized, so be sure they are connected properly. Failure to do so can result in a kB!