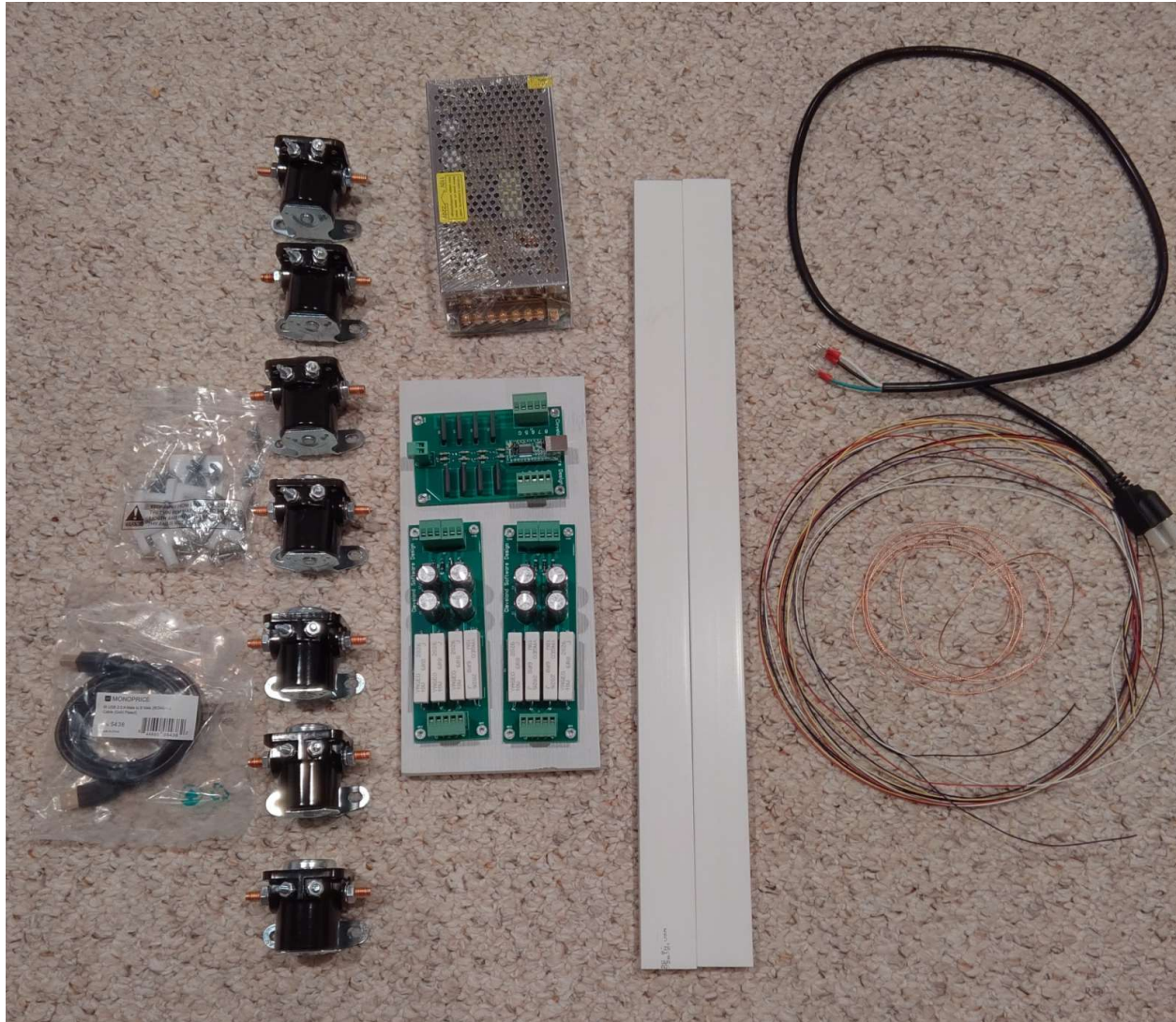# Instructions for assembling the complete kit


*Note that parts might look different from the picture above as I have made a lot of improvements to the original design – the solenoid life extenders have the capacitors mounted underneath to better isolate them from the resistors and shorten the board a bit and the relay board now uses negative switching transistors that can handle more current, have LED indicator lights that help with troubleshooting and are modular to make them easy to replace in case of a failure down the road.

1. Start by mounting the common wire in place on the solenoid bars (Stapling the wire down is optional, but nice to keep it in place prior to mounting the solenoid bars)
    a. Make sure that you leave a good amount of wire free on the end of each board so it can connect into the solenoid life extender boards.
    b. Make sure that the wire is on one side of the solenoid mounting board so the solenoids will go on top of it when mounting.
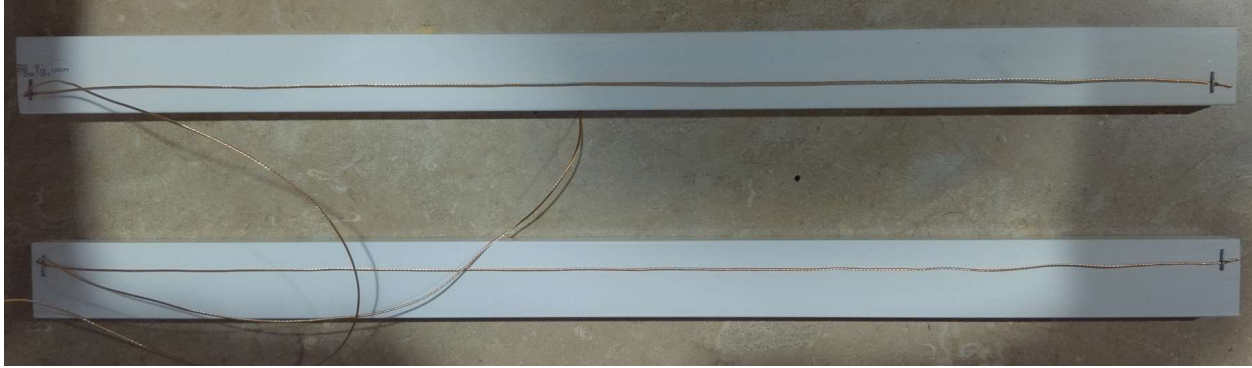
2. Mount all the solenoids and the life extender boards on to the solenoid boards
   a. For this step, you need 4 smaller mounting screws, 4 PCB mounting feet and hardware as well as 16 of the 1/2" solenoid mounting screws
   b. I mount the solenoid life extender boards to the solenoid board with two of the white PCB mounting feet, it is not necessary to use all four mounting holes.
   c. Screw the solenoids over the common wire and connect the wire into the "+" terminal in the life extender board. Be sure the keep the common wire away from other parts of the board that could short it out, so make sure it will not touch any other metal object except the base of the solenoids.
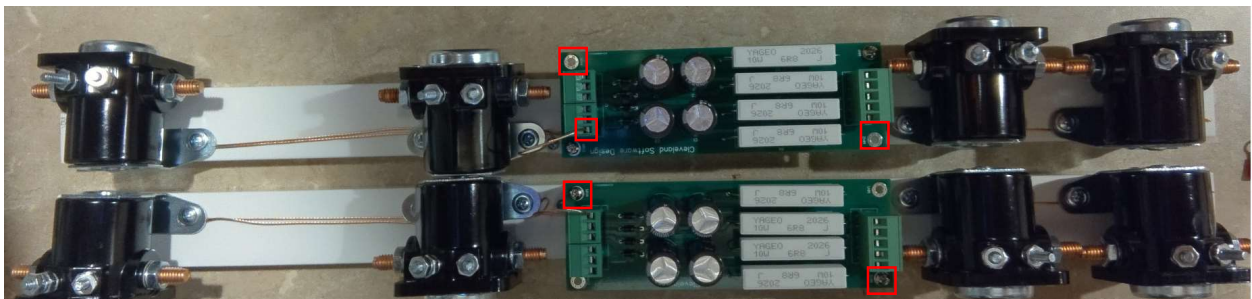
3. Connect all the solenoids into the 1-4 connection on the solenoid life extender board
   a. For this step you will use the supplied wire and 8 of the supplied ring terminals
   b. From left to right, the solenoids are connected to terminal 1, 2, 3, 4 (This is not critical, but if you wire it this way, then the DOF configuration will match the instructions I have on my website)
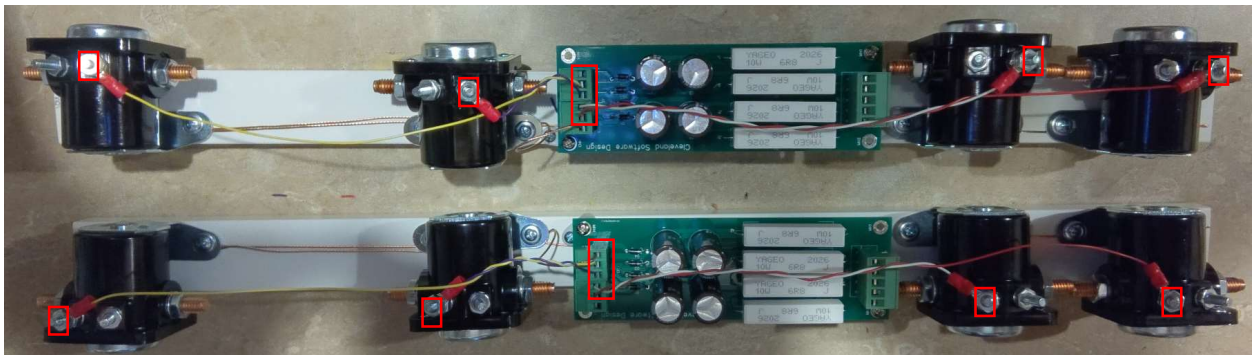
4. Now start assembling the power supply and relay board. First step is to mount the power supply and relay board (Shown is the Sainsmart board, but if you purchased the KL25Z board, the mounting is very similar)
   a. For this step you will need 6 of the smaller mounting screws and 4 PCB mounting feet and hardware

   b. Back of power supply showing the other screw mounting position

5. Now connect the power supply to the relay board and the power cable
   a. For this step you will need a small length of 18 gauge wire, two spade terminals and the power plug
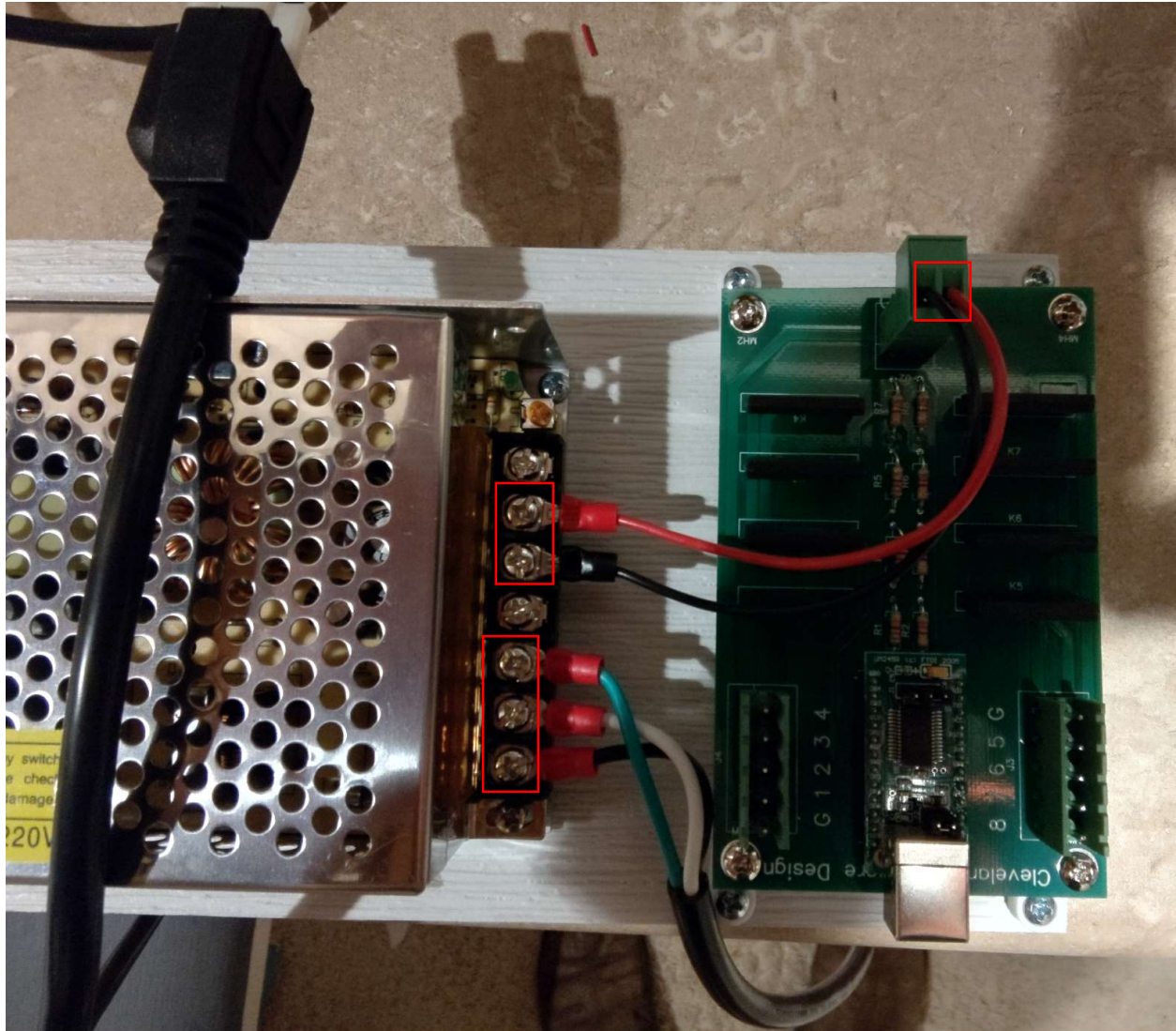
6. The next step is to use the remaining wire to the plugs that connect the relay board to the solenoid life extenders
   a. Make sure to line up the numbers and the "+" on the life extender boards with the relay board "+" (The newer relay board and KL25Z board shares the positive terminal and switches the negative side)
   b. Whether you are using the KL25Z or the Sainsmart board, you will want to use ports 1-8 for your solenoids. On the KL25Z you have a lot of options for other devices too, but for this tutorial we will assume just solenoids.
   c. I provide enough wire to make at least a 3' connection between the board and the solenoid bars, this should be plenty for any cabinet.
   d. You can optionally twist the wires to make for a cleaner looking installation.
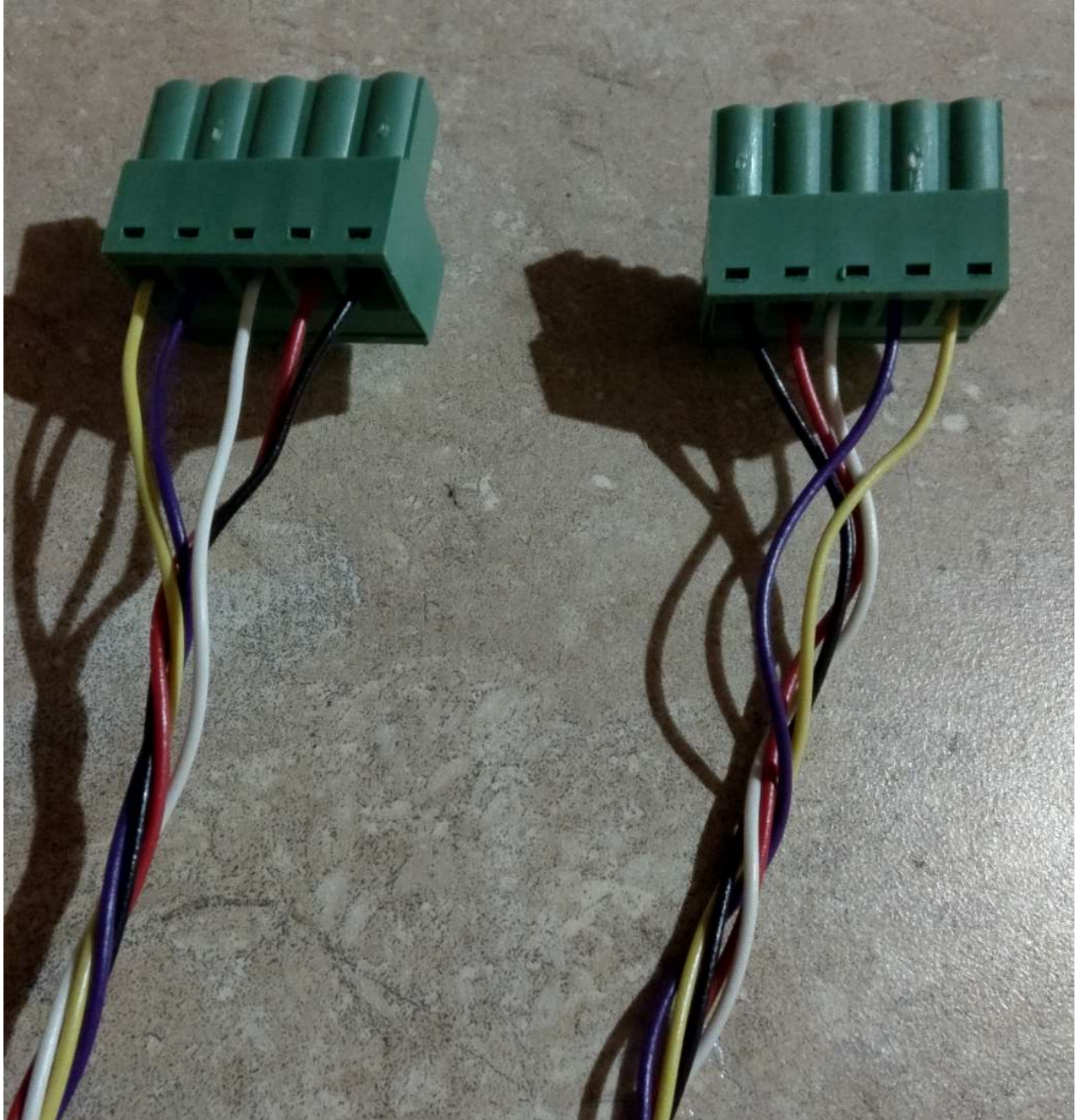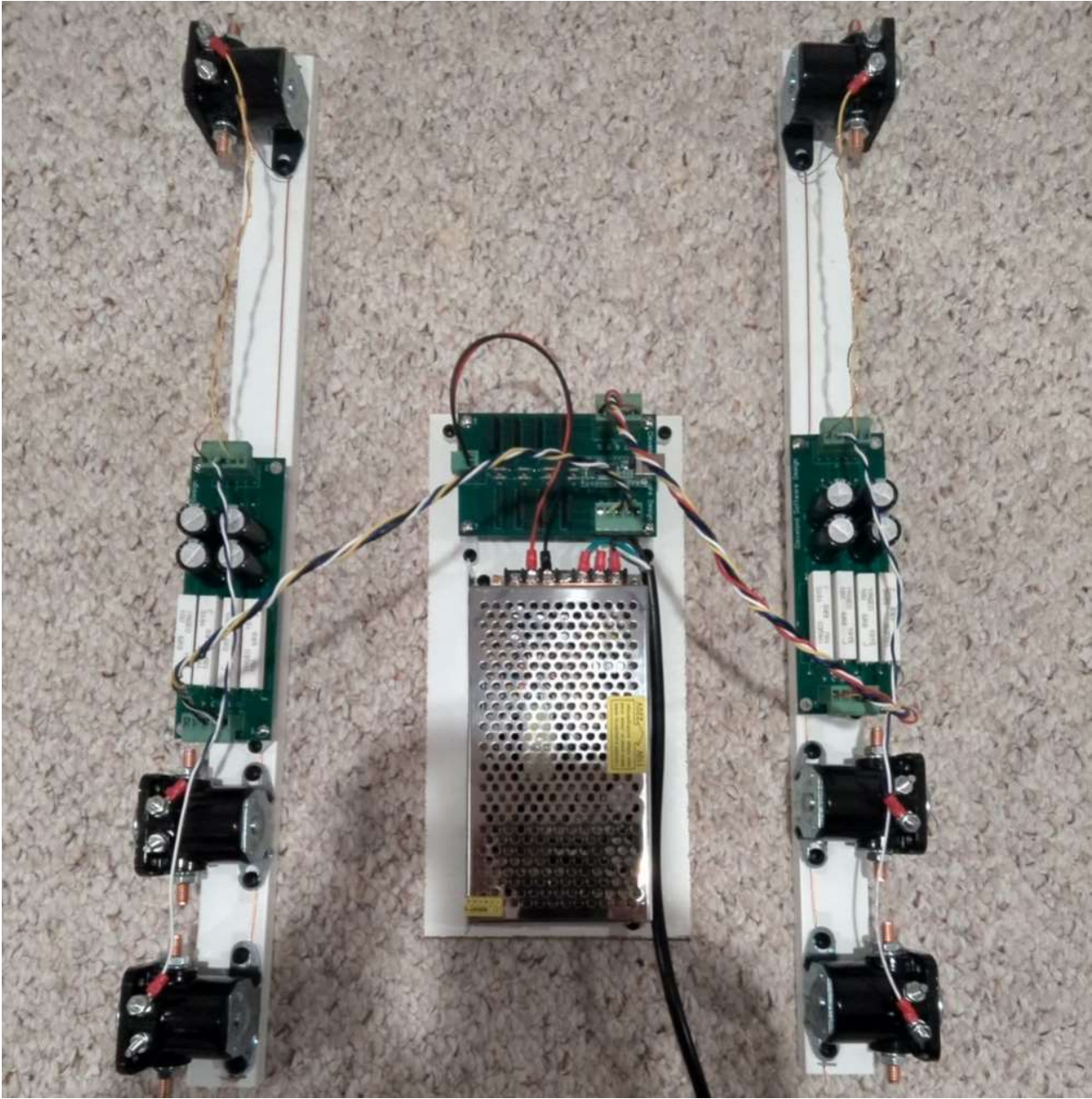
7. Now plug everything in and you are almost done! The last step is to pre-set the included 1-1/4" drywall screws to make installation on the side of your cabinet fairly easy
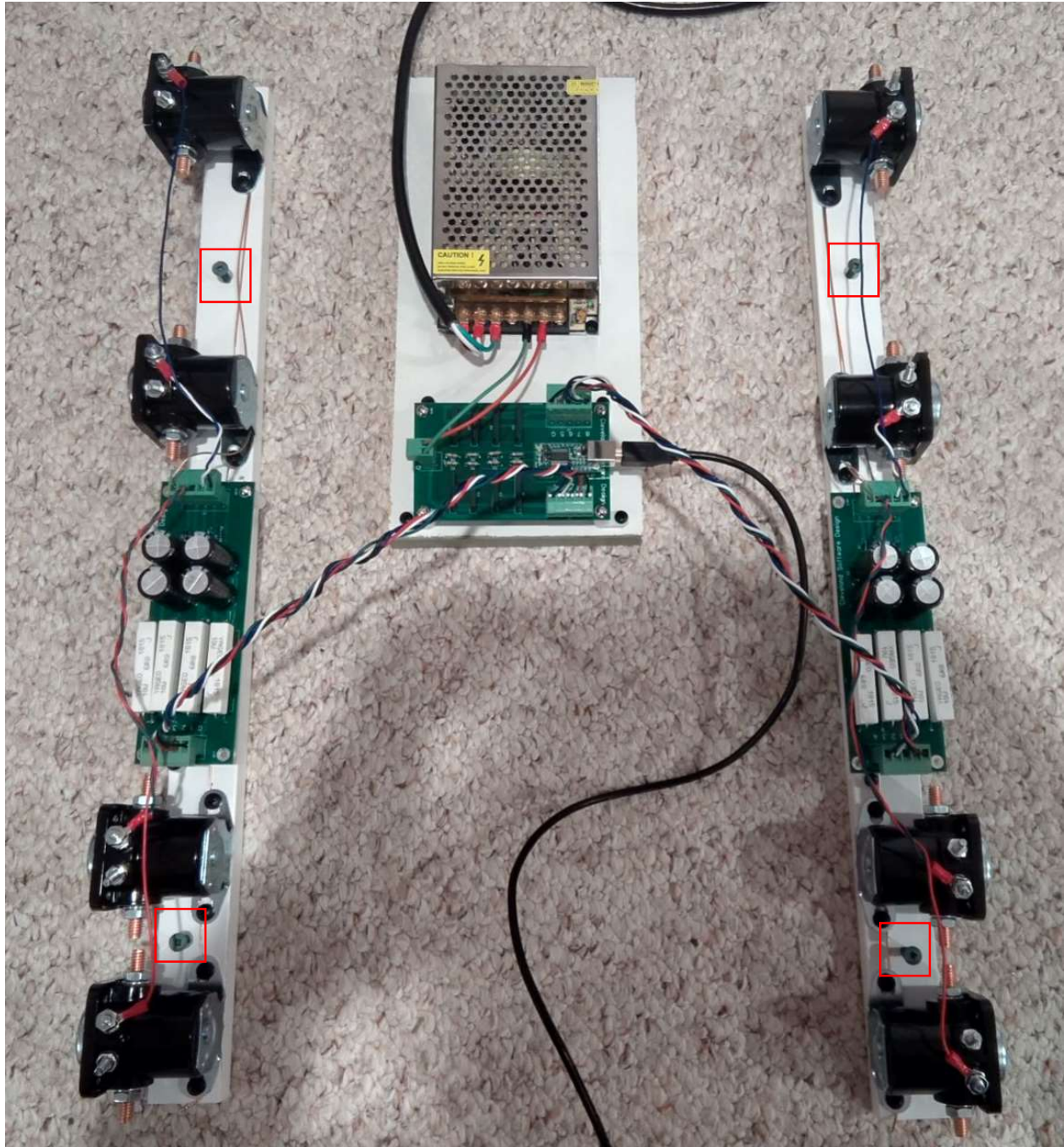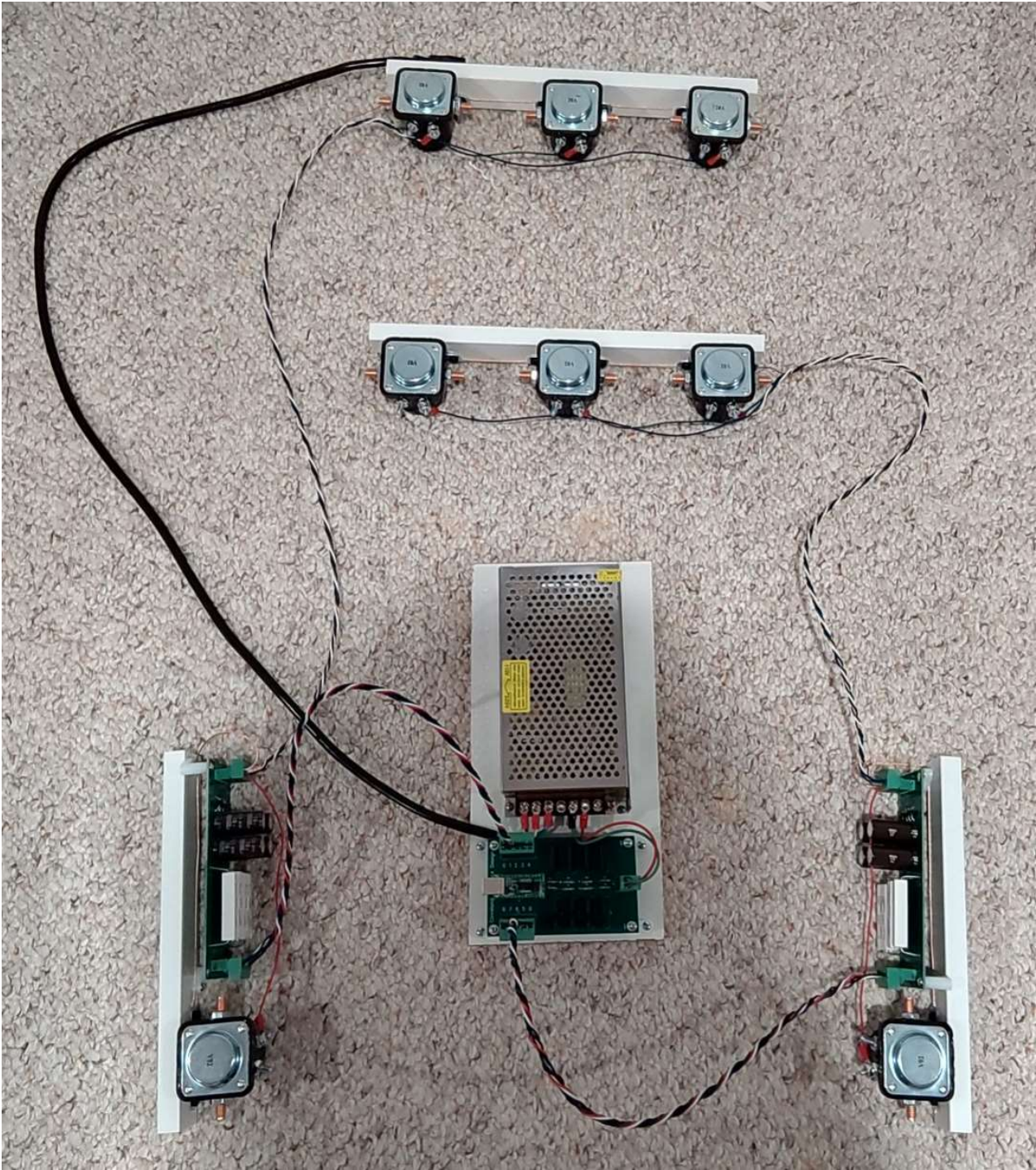
8. You can do a lot of different types of configurations that meet the need of your setup, all of these use the 24" solenoid bars that are included, some examples are below:
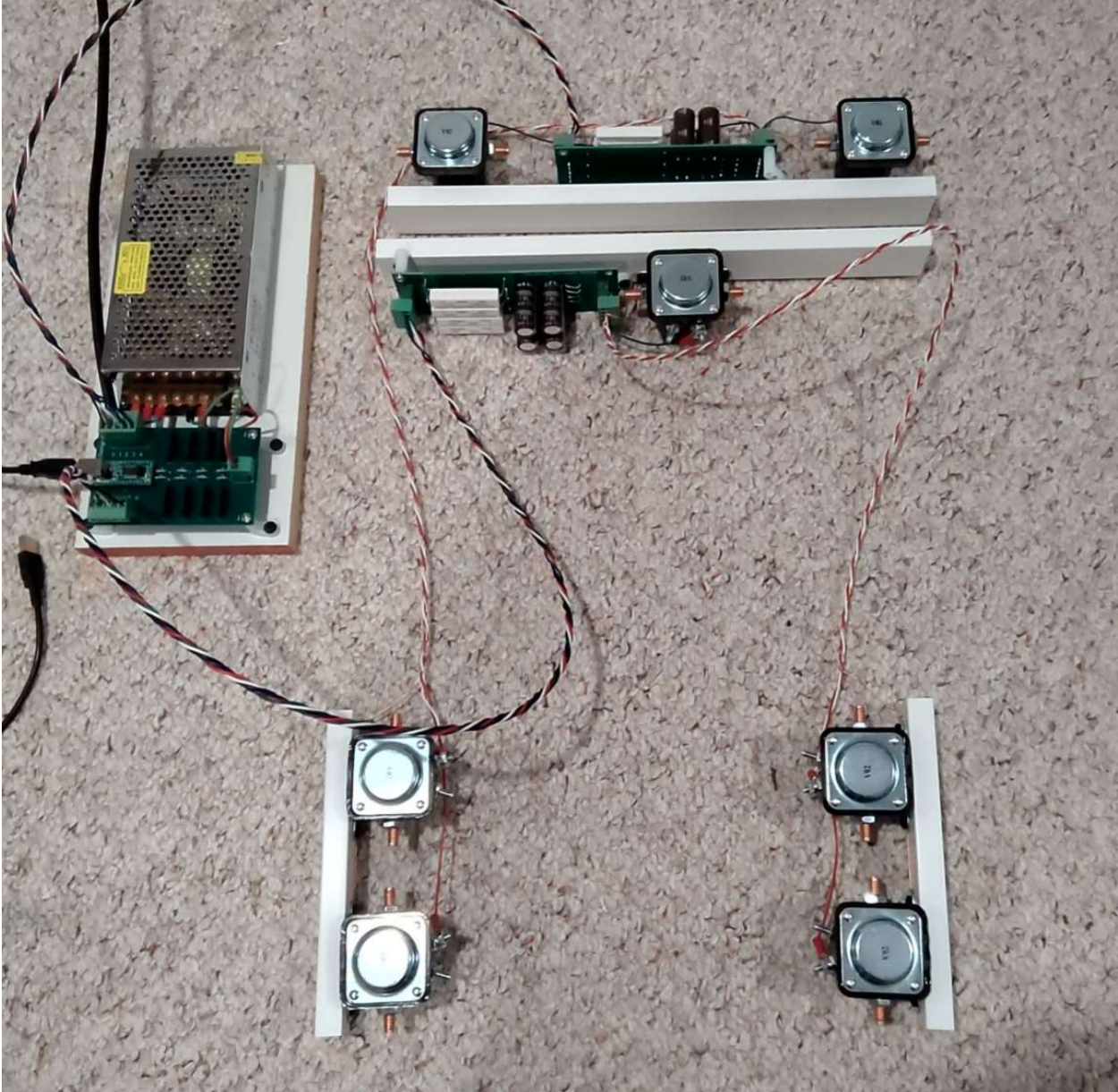
6 Solenoid Configuration

Configuration to add to a flipper solenoid setup to have a 10 solenoid configuration with all solenoids in their proper positions

A nice 7 solenoid setup

Setup combining the flipper solenoids board with the 8 solenoid kit