HerculEASE Installation

Welcome

Thank you for purchasing the HerculEASE DIY Kit!

This kit makes it easier for a DIY-minded person to modify their IO board without soldering and see for themselves how additional capacitance changes flipper and other behaviors.

WARNINGS

This kit changes the circuit characteristics of the IO board. It is based on concepts derived from crowdsourced material and has not been approved by the original manufacturer. No guarantees are made regarding the resulting functionality or impact to the installed machine. This is an experimental kit. *Use at own risk*.

Never remove the HerculEASE fuses while the machine is powered on!

If the HerculEASE fuses need to be removed, always power off machine, wait for the LEDs to go completely dark, then wait an additional minute before removing. This must be performed to ensure the capacitors are discharged.

Contents

HerculEASE Hero Edition includes:

- Two (2) capacitors with custom HerculEASE functionality (fuses and blue rings)
- One (1) HerculEASE Podium
- One (1) adhesive mounting tape

Original HerculEASE includes:

- Two (2) capacitors with custom HerculEASE functionality (fuses and blue rings)
- One (1) adhesive mounting base
- One (1) zip tie

Installation Overview

Here are the steps you'll perform at a high level:

1. Secure the HerculEASE capacitors to the game
2. Attach the HerculEASE blue rings to IO board's hex screw
3. Remove 2 fuses from the IO board and replace with HerculEASE fuses

Installation Details

Some games have the IO board in the backbox while others have it in the cabinet. HerculEASE instructions vary slightly between these two configurations.

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For Dialed In, Pirates of the Caribbean, Willy Wonka and Guns N' Roses, follow the "backbox" install instructions.

For Wizard of Oz and Hobbit, follow the "cabinet" install instructions.

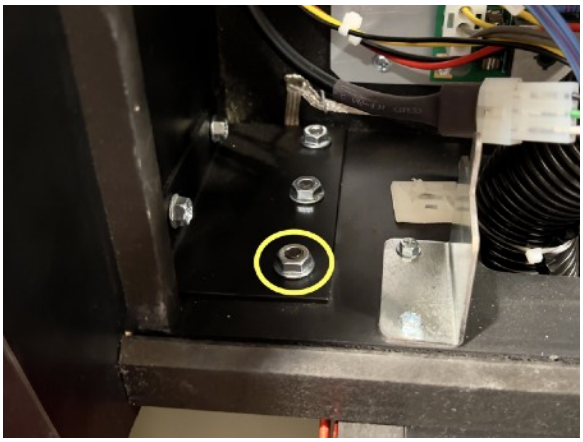
Notes:

- (For original HerculEASE) Each capacitor has a red wire with a black sleeve and a fuse at the end. This fuse should be at about a 90 degree angle relative to the red wire. **DO NOT STRAIGHTEN**.
- This document does not cover the steps required to access the IO board.
- It is recommended the game is powered off for 60 seconds and the wall plug is disconnected.

Mounting HerculEASE Hero Edition capacitors

Follow these steps if you have the Hero Edition.

1. Insert each capacitor into the HerculEASE Podium. The fit is intended to be snug, so a little pressure is needed to fully insert each capacitor.
2. If performing a backbox install, remove nut shown in Picture 1A using a 7/16" nut driver. To prevent the bolt from falling to the floor, place your hand underneath. Place the HerculEASE podium over the exposed bolt and reattach the nut as shown in Picture 1B.



Picture 1A

Picture 1B

3. If performing a cabinet install, attach the adhesive mounting tape to the square area on the backside of the HerculEASE podium and press podium against the right side of the metal case near the yellow/red/white cables. See Picture 2D for recommended location, although podium is not shown.

Mounting original HerculEASE capacitors

Follow these steps if you have an original HerculEASE.

1. Place the zip tie though the mounting base and, with the wires facing upward, place the two capacitors together and slightly tighten the zip tie.
2. Arrange the mounting base so that it is in the middle (horizontally) of the two capacitors and center the zip tie vertically on the capacitors, tighten the zip tie. See the front and back views in Picture 2A and Picture 2B.

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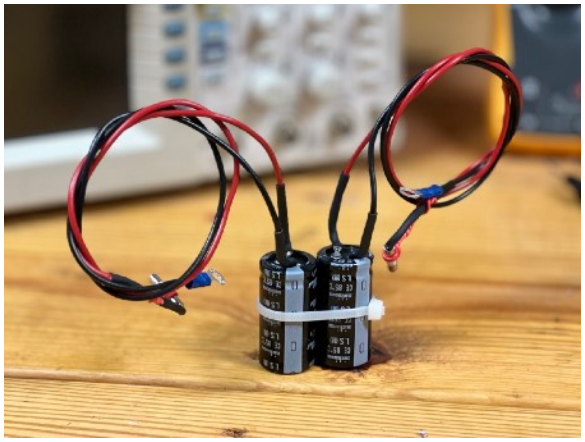
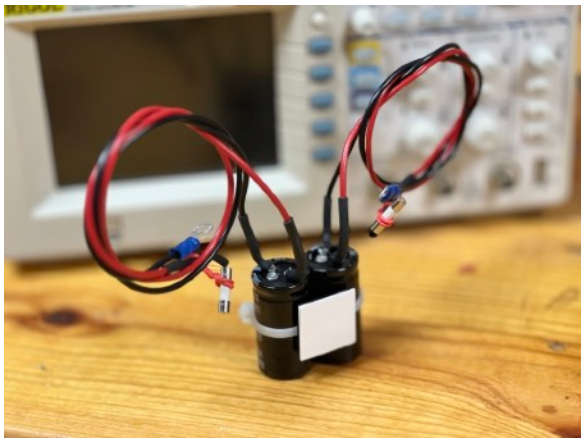
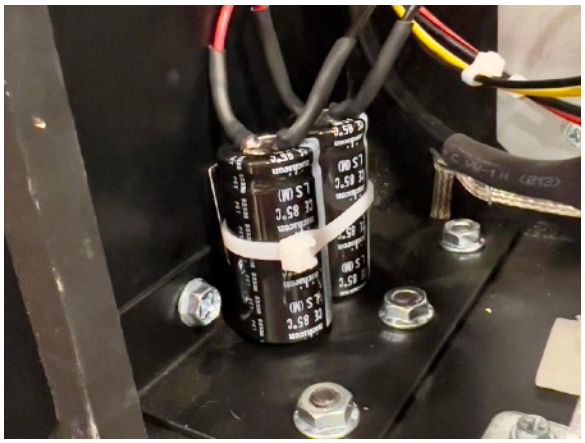


Picture 2A

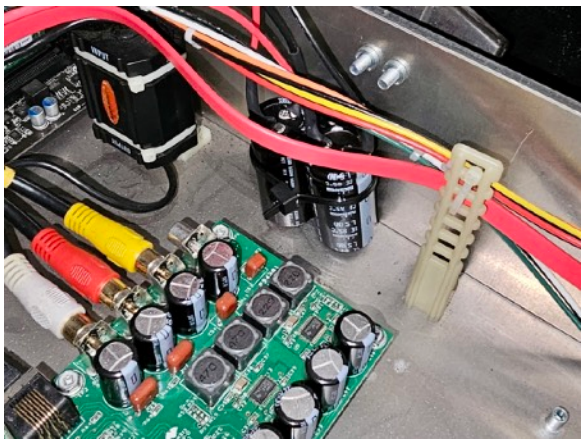


Picture 2B

3. Remove the adhesive protection. For backbox installation, press the capacitors against the bottom left of the backbox (Picture 2C). For cabinet installation, press capacitors against the right side of the metal case near the yellow/red/white cables (Picture 2D)



Picture 2C (Backbox)



Picture 2D (Cabinet)

Attaching the HerculEASE blue rings

1. Identify and remove the hex screw from the IO board (near J701). The board will not fall out. For backbox installations, this screw is located at the upper left of the IO board (see picture 3A). For cabinet installations, this screw is located at the upper right of the IO board (see picture 3C).
2. Place the two blue rings onto the screw and reattach the screw to the IO board. Ensure the screw is snug. See picture 3B for a backbox example.

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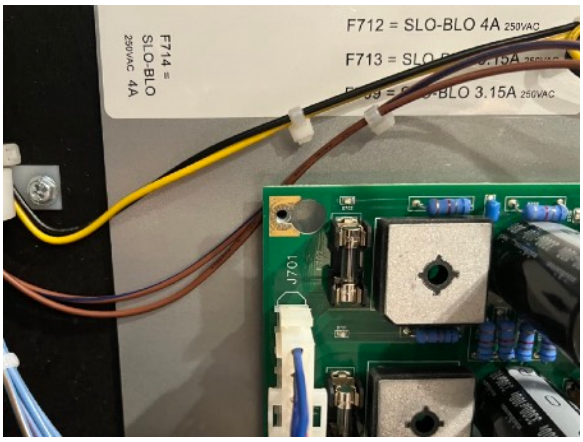
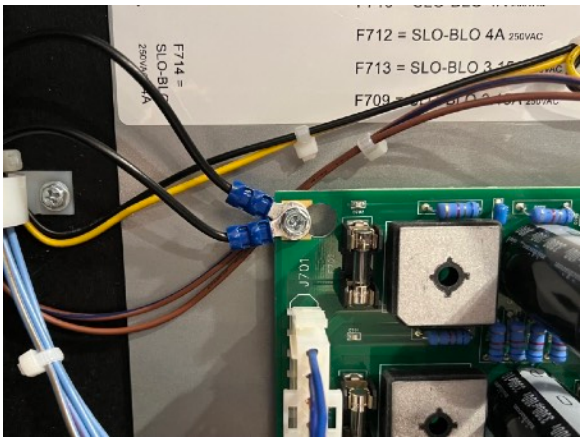
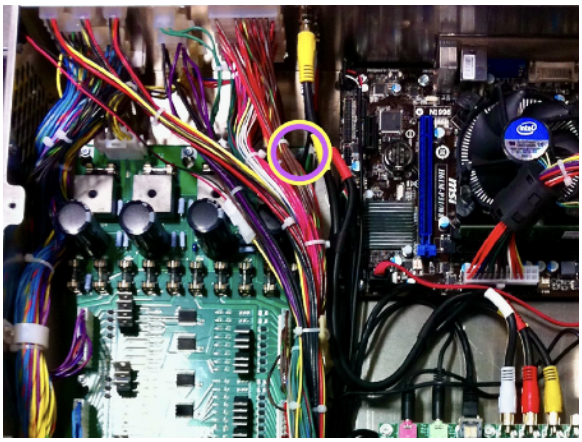


Picture 3A (Backbox)



Picture 3B (Backbox)



Picture 3C (Cabinet)

Installing the HerculEASE fuses

It is very important to follow the fuse orientation instructions stated below.

1. Carefully remove the fuses located at F704 and F708. They are no longer needed. Pictures 4A (backbox) and 4C (cabinet) highlight these fuses with yellow circles. Picture 4B shows them removed from the backbox.

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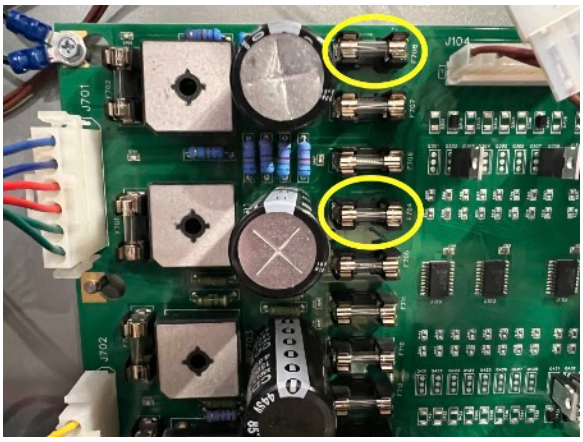
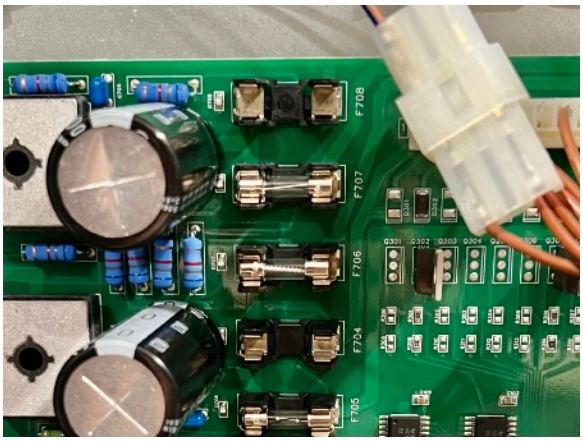
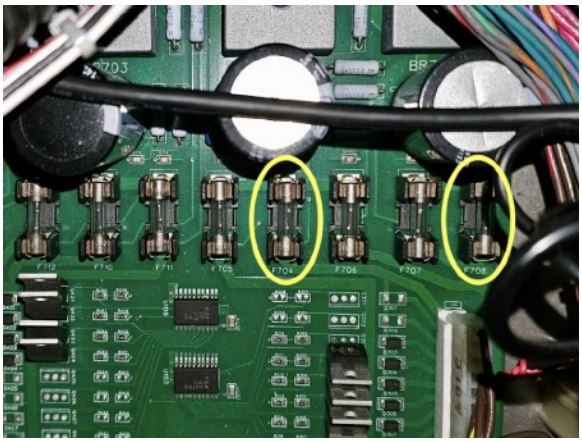


Picture 4A (Backbox)

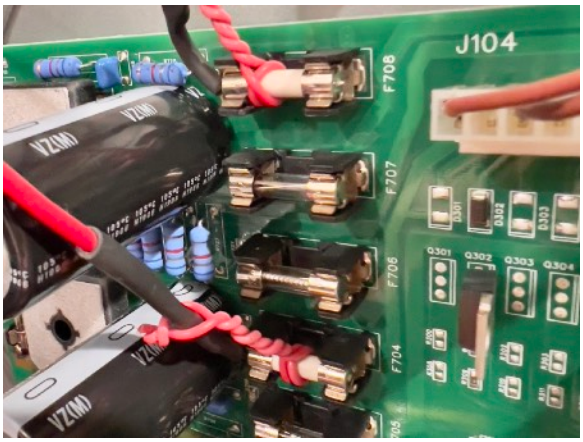


Picture 4B (Backbox)

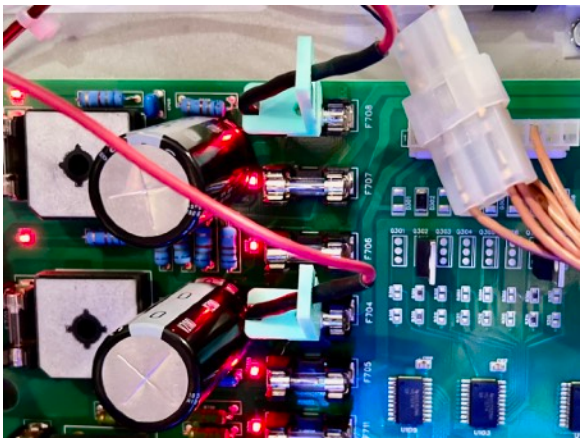


Picture 4C (Cabinet)

2. **Ensuring the red wire with the black sleeve is near the existing large capacitors** (left side for backbox, top for cabinet), insert one of the HerculEASE fuses into F704 and then the other into F708. It does not matter which HerculEASE fuse is used. See picture 5A for a backbox example with the original HerculEASE and picture 5B for an example with the Hero edition.



Picture 5A (Backbox)



Picture 5B (Backbox)

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Congratulations!

Double check your work and enjoy your pinball machine!

Light Technical Information

A few technical aspects of HerculEASE are Informally discussed below.

Additional Capacitance

The HerculEASE kit includes two 3300 uF capacitors. Each is connected to a separate circuit on the IO board. For each circuit, the HerculEASE design places this additional capacitor in parallel with an existing 3300 uF capacitor. When capacitors are placed in parallel, the total capacitance is the sum, resulting in 6600 uF capacitance.

Fuse Locations

The additional capacitance is not only for flippers. It is available to other functionality, based on the game design, such as various VUKs, pop bumpers, etc. Fuses F704, F705 and F706 are all connected to one circuit and fuses F707 and F708 are connected to another circuit. When HerculEASE is connected to F704, the added capacitance is available to not only F704 but also F705 and F706. Similarly, when HerculEASE is connected to F708, the added capacitance is also available to F707.

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