

TRON PINVISION

INSTALLATION INSTRUCTIONS

DISCLAIMER

Modifying your pinball machine can be a very complex operation. All of these instructions assume a stock game is being used. Other modifications may require alternate instructions than the ones listed in this manual.

While we have gone to great lengths to simplify the installation process, 86Pixels LLC cannot be held responsible for any damage caused by installing this product or by any actions performed during the installation process.

Please make sure that the game is completely powered off and unplugged before attempting to install this product.

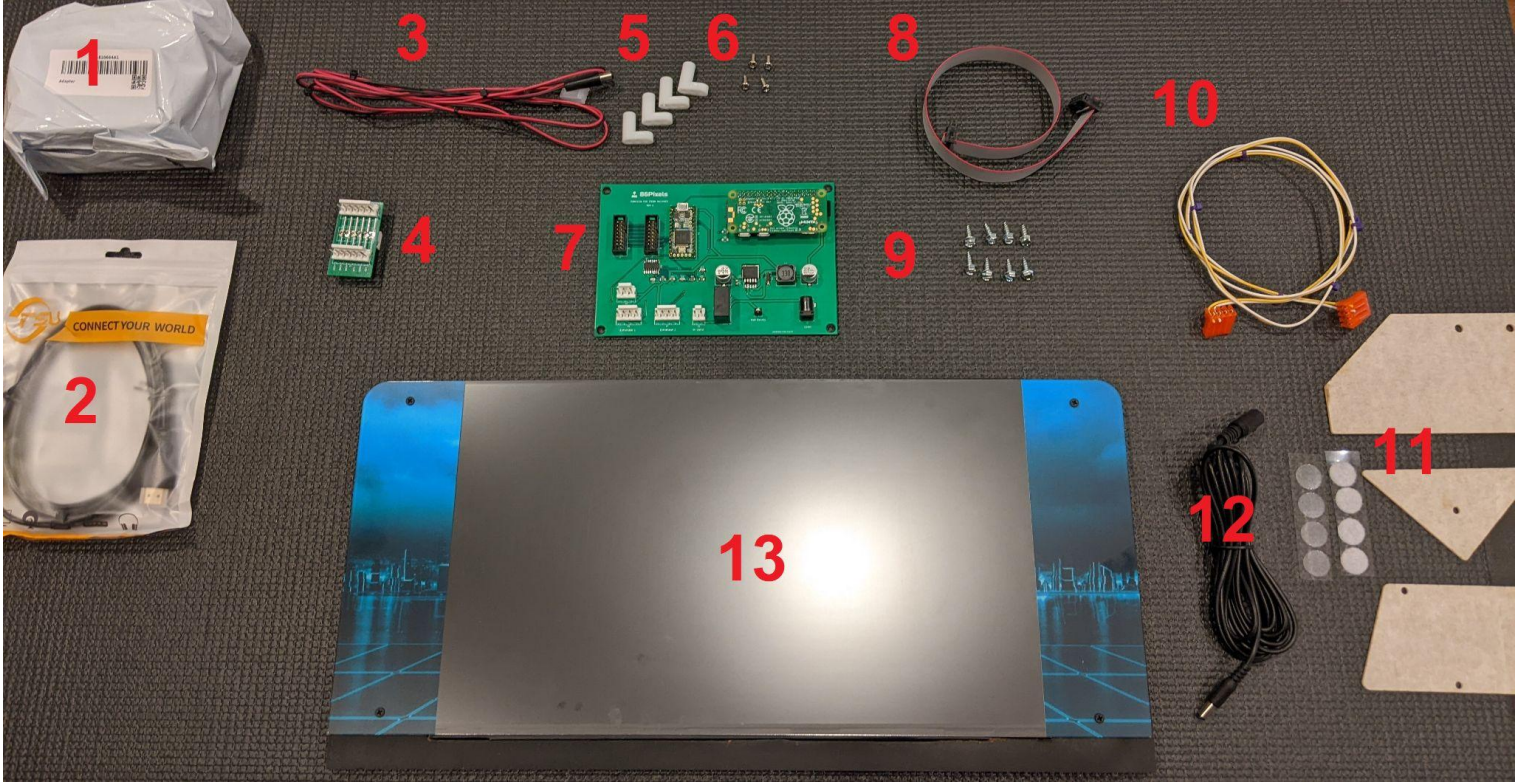
TRON is a registered trademark of Walt Disney Studios.

The animations included in this kit do not incorporate any copyrighted works or derivations from Walt Disney or any other parties affiliated with the TRON movie or video game series.

The firmware, software and animations are copyrighted by 86Pixels LLC.

PACKAGE CONTENTS

#	Item	Quantity
1	12V 3A DC Power Brick (US)	1
2	HDMI Cable	1
3	Display Power Cable (3 position molex to DC barrel jack)	1
4	Power Sensing Splitter PCB	1
5	PCB Standoffs (L brackets)	4
6	PCB Mounting Screws (Phillips head, machine screw)	4
7	Pinvision Controller Board	1
8	DMD Adapter Ribbon Cable	1
9	½" Hex Head Mounting Screws	8
10	Power Sensing Cable (6 position to 2 position)	1
11	Light Cycle Relocation Plastics (left side, right side, ramp replacement cover, 4 velcro pairs)	1 Set
12	DC power extension cable	1
13	Pinvision Display Unit	1
14	1.5" 6-32 lightcycle relocation screw (not shown)	1
15	1" 6-32 nylon standoff spacer (not shown)	1



STEP 1 - REMOVING THE OLD BACKBOARD

First, disconnect the GI and flasher cable harnesses from the rear of the machine at the backboard. These are located on molex connectors in the cable harness near the backboard.

TRON LE machines will have an additional cable harness for the moving recognizer that must also be disconnected.

TRON LE owners must also disconnect the metal armature and existing recognizer toy to remove the backboard without damaging the playfield plastics.

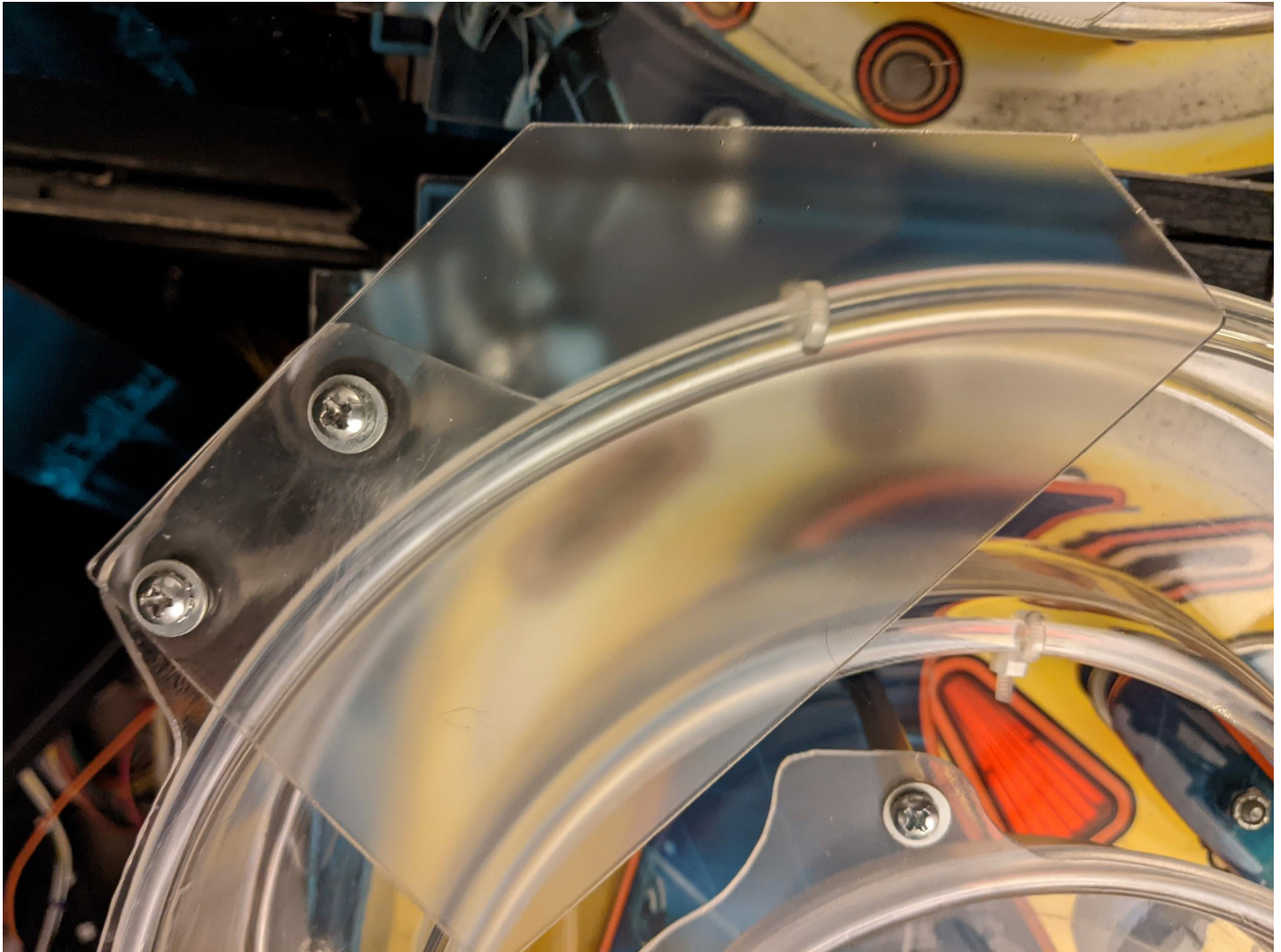
Once the cable harnesses are unplugged, unscrew the 4 rear wood screws holding the backboard in at the left and right "L" brackets. Do not remove the "L" brackets from underneath the playfield. These will be reused to mount the new backboard.

Carefully lift the old backboard straight up to remove it from the game. Be sure to watch for any snagged wires.

STEP 2 - RELOCATING THE LIGHT CYCLES (OPTIONAL)

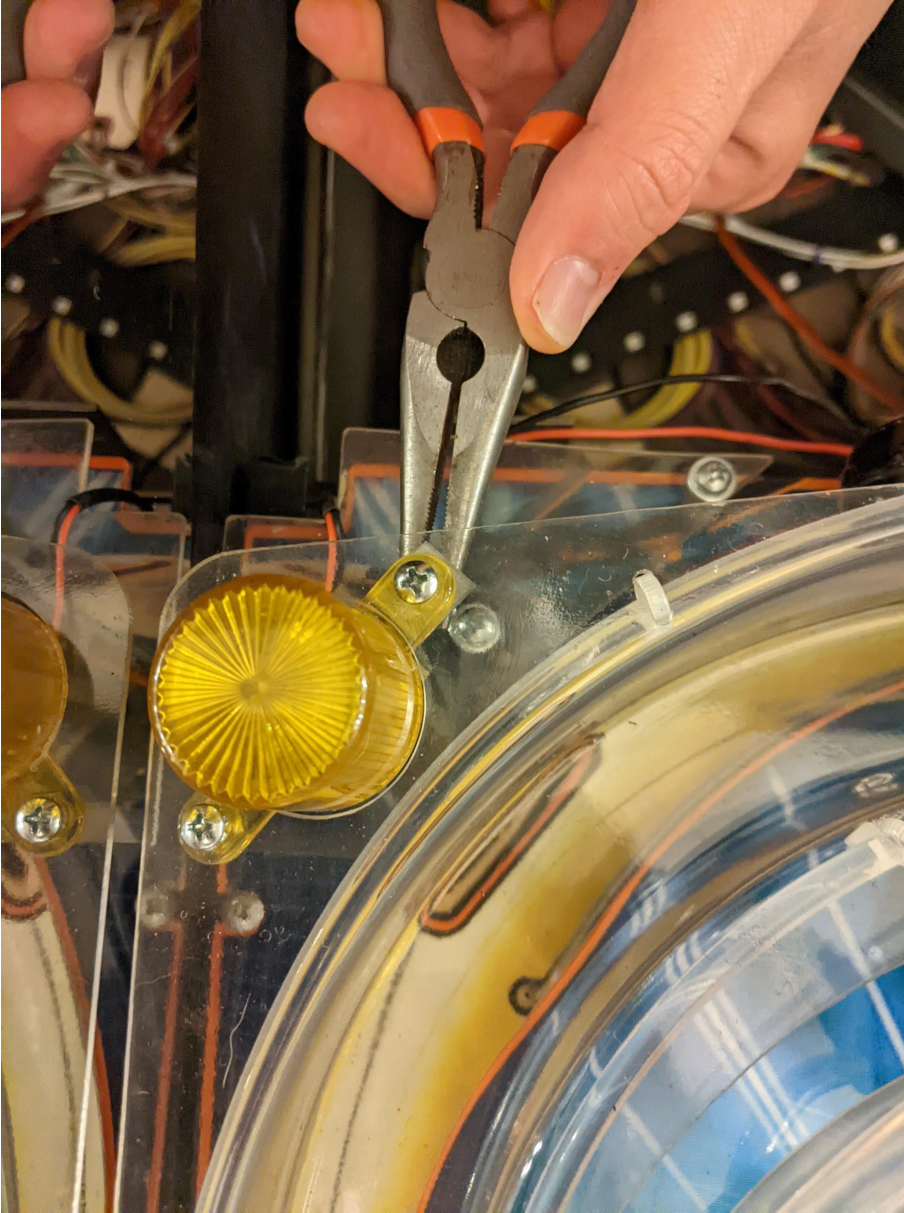
The light cycles by default are mounted on top of the ramp assemblies in the center of the game. Each kit includes an optional relocation kit that mounts the light cycles off to the sides. If you wish to use this kit, it is best to perform this step with the backboard display unit out of the game.

- A. Remove the light cycles and plastics from the left and right side ramps.
- B. Replace the upper right side plastic with the included ramp plastic as shown below



(The screws from the original plastic will be re-used to mount the new plastic)

C. Unscrew the left topmost flasher screw

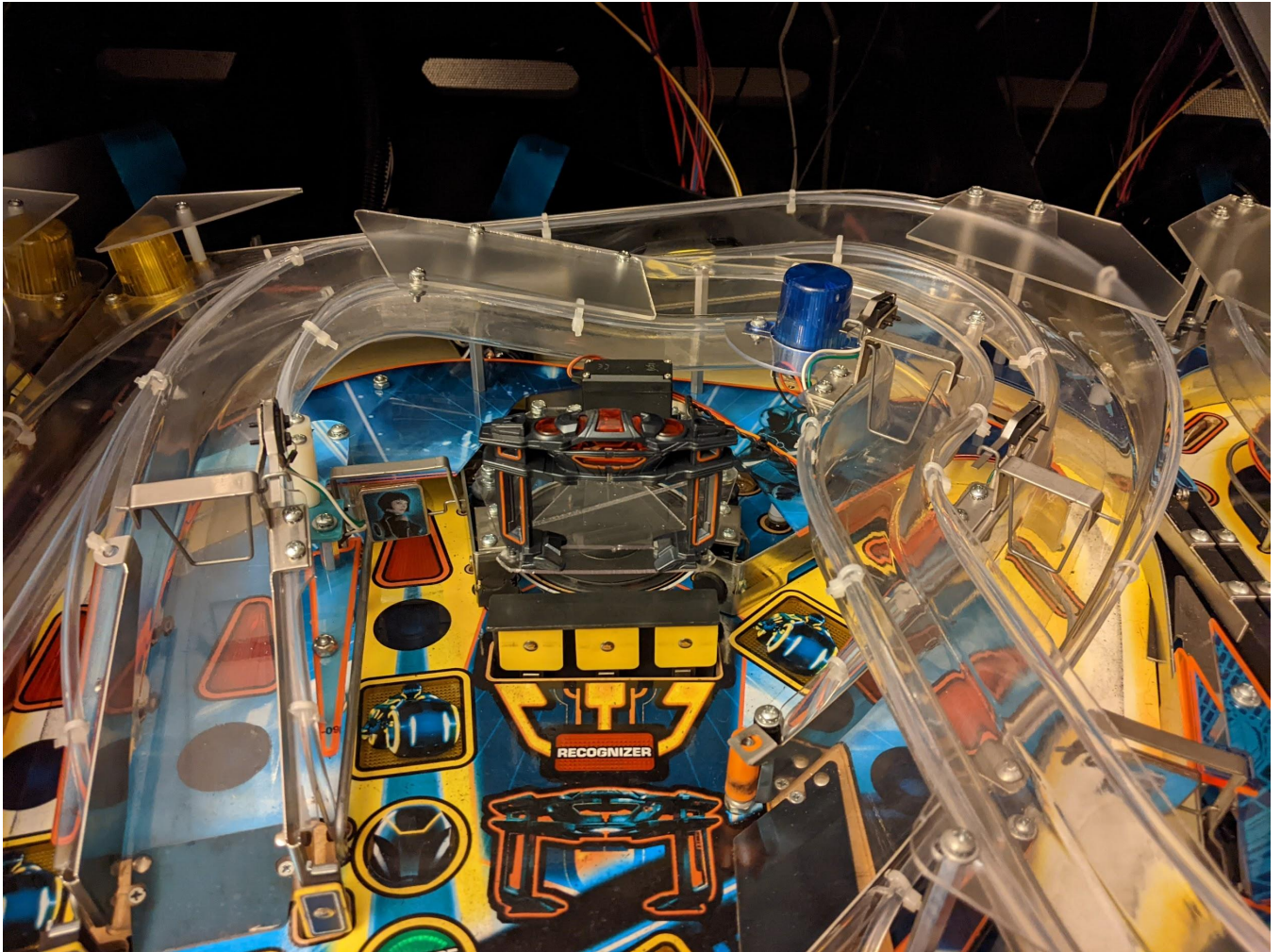


- D. Remove and replace the screw with the included 1.5" 6-32 machine screw, spacer and plastic as shown below:



- E. Secure underneath using the original lock nut that was on the bottom of the flasher
F. Optionally replace the left ramp center plastic with the included clear plastic (this will prevent airballs where the old light cycle plastic was)

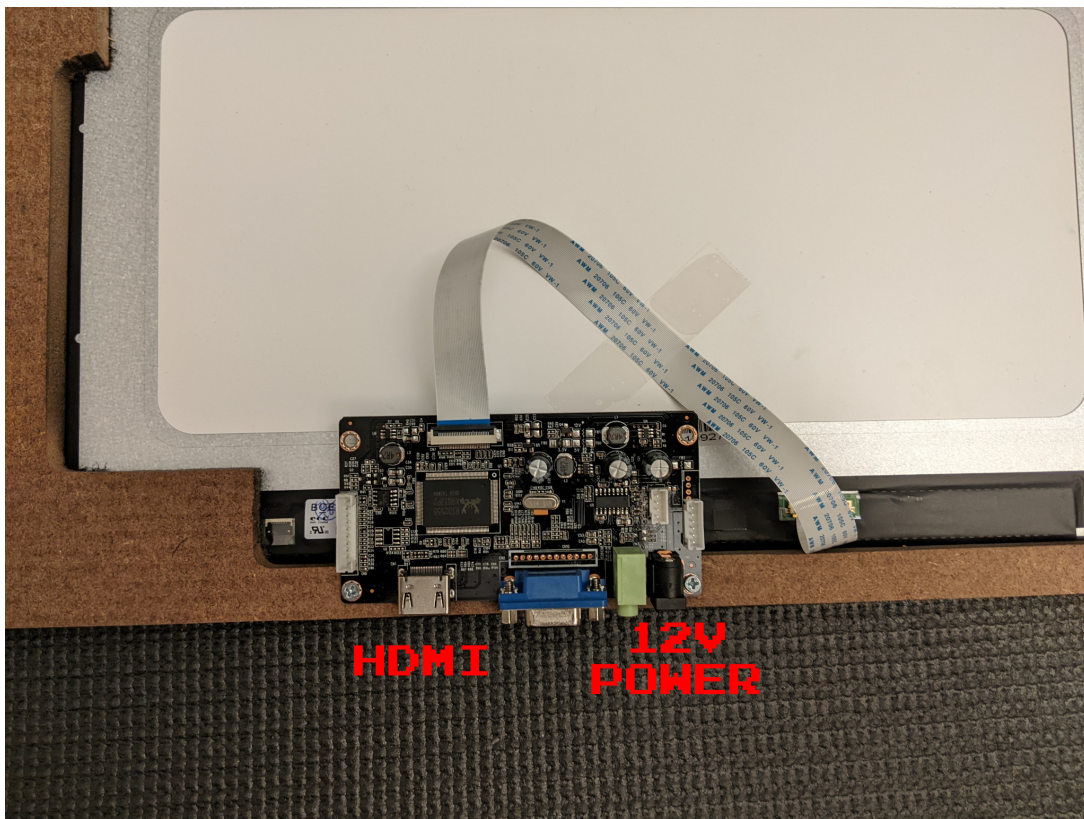
G. The finished units should look like this:



H. Use the included velcro adhesives to stick the light cycle units to the top of the new plastics.

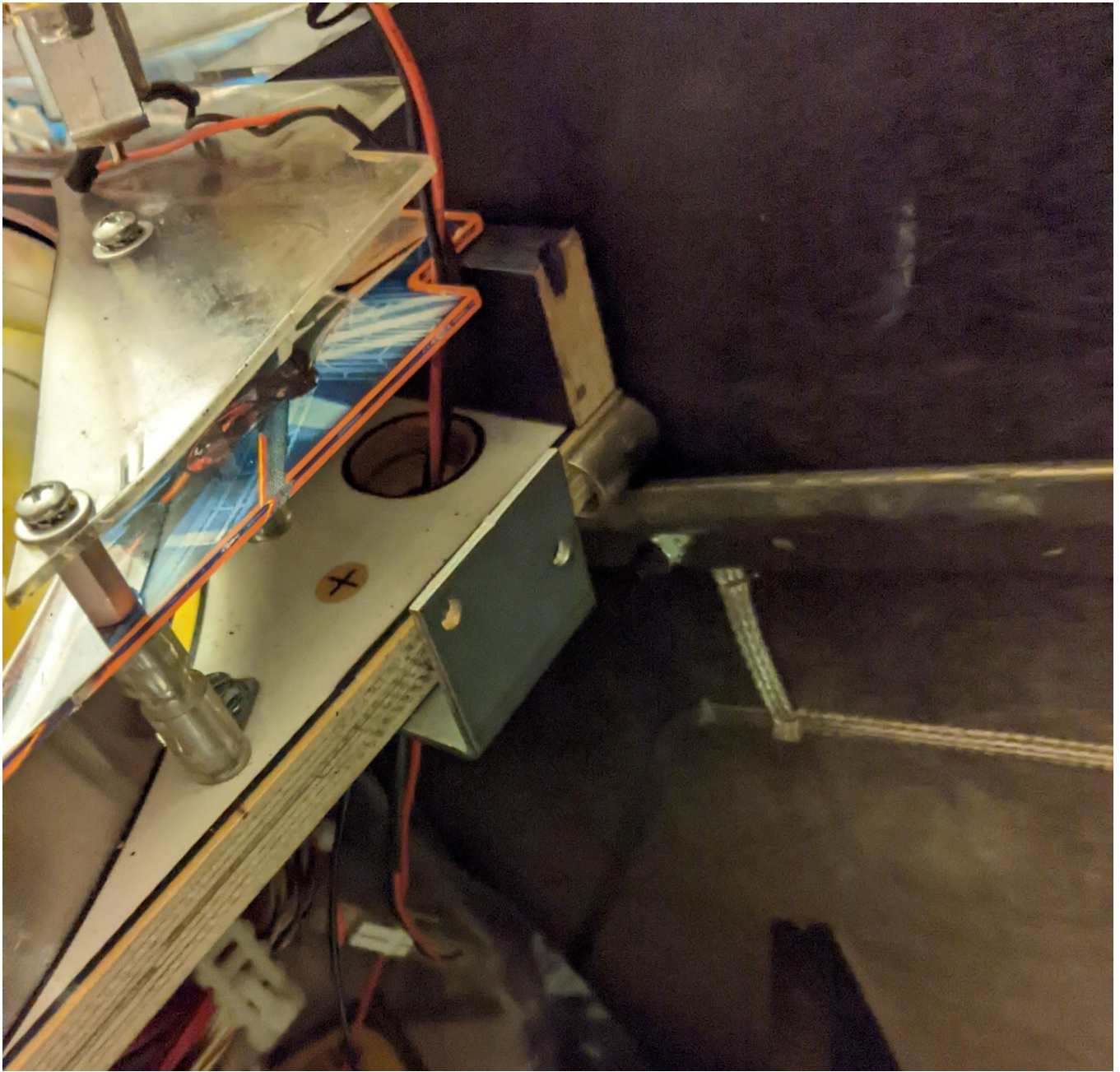
STEP 3 - INSTALLING THE NEW BACKBOARD DISPLAY UNIT

- A. If your new backboard unit has protective paper on the front of the plastic, remove it carefully. This can be done without removing the plastic panel from the front of the device.
- B. Be careful when handling the display unit as the IPS panels are fragile.
- C. Plug the display power cable (item 3) into the display controller board on the rear of the panel as shown below.
- D. Plug the HDMI data cable (item 2) into the display controller board on the rear of the panel as shown below.

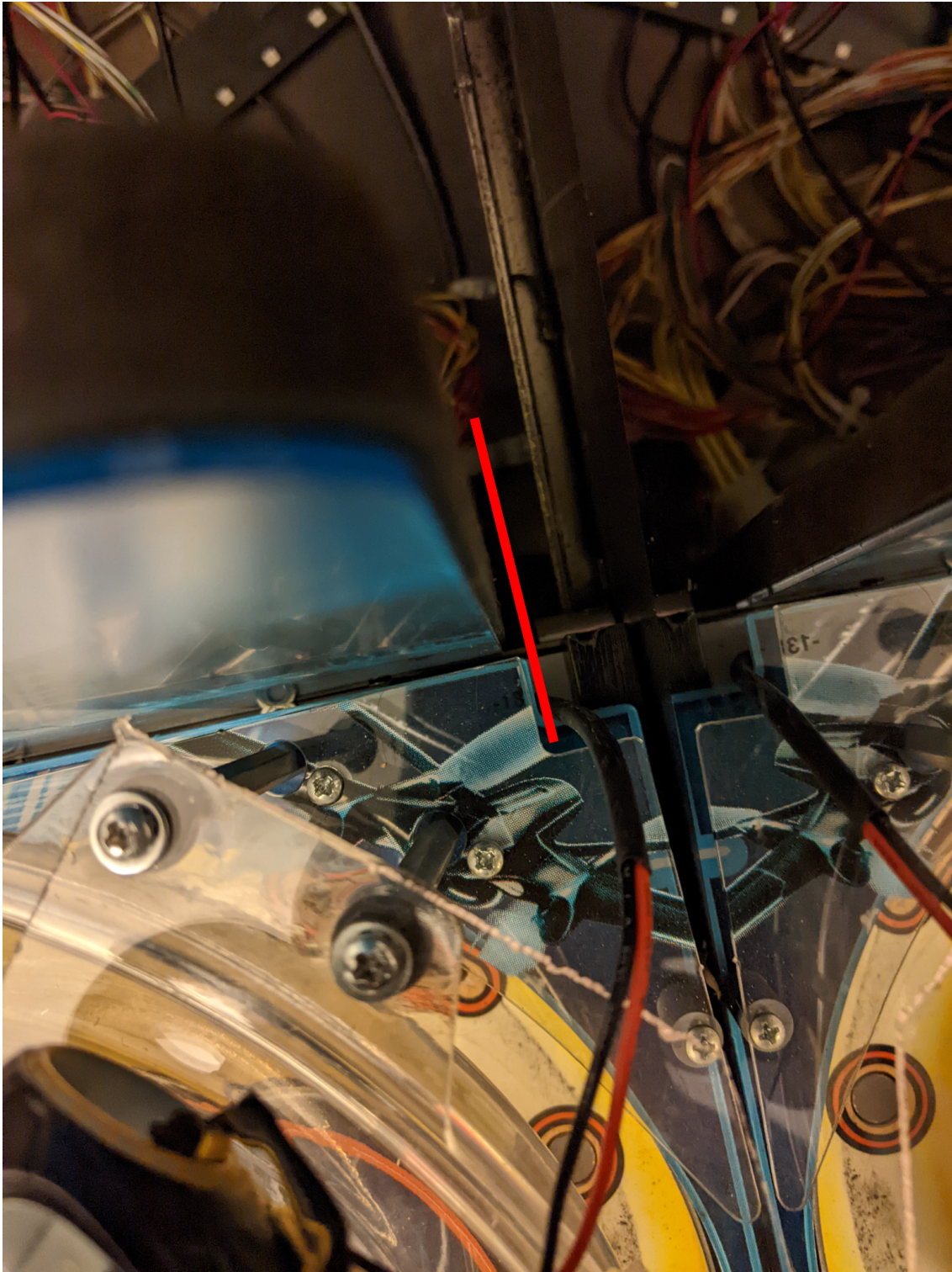


- E. Feed both cables into the head cabinet.

- F. Place the entire backboard assembly onto the existing L brackets at the rear of the game. Some games may require you to slightly bend the L brackets outward due to lower tolerances in order for the new panel to fit.



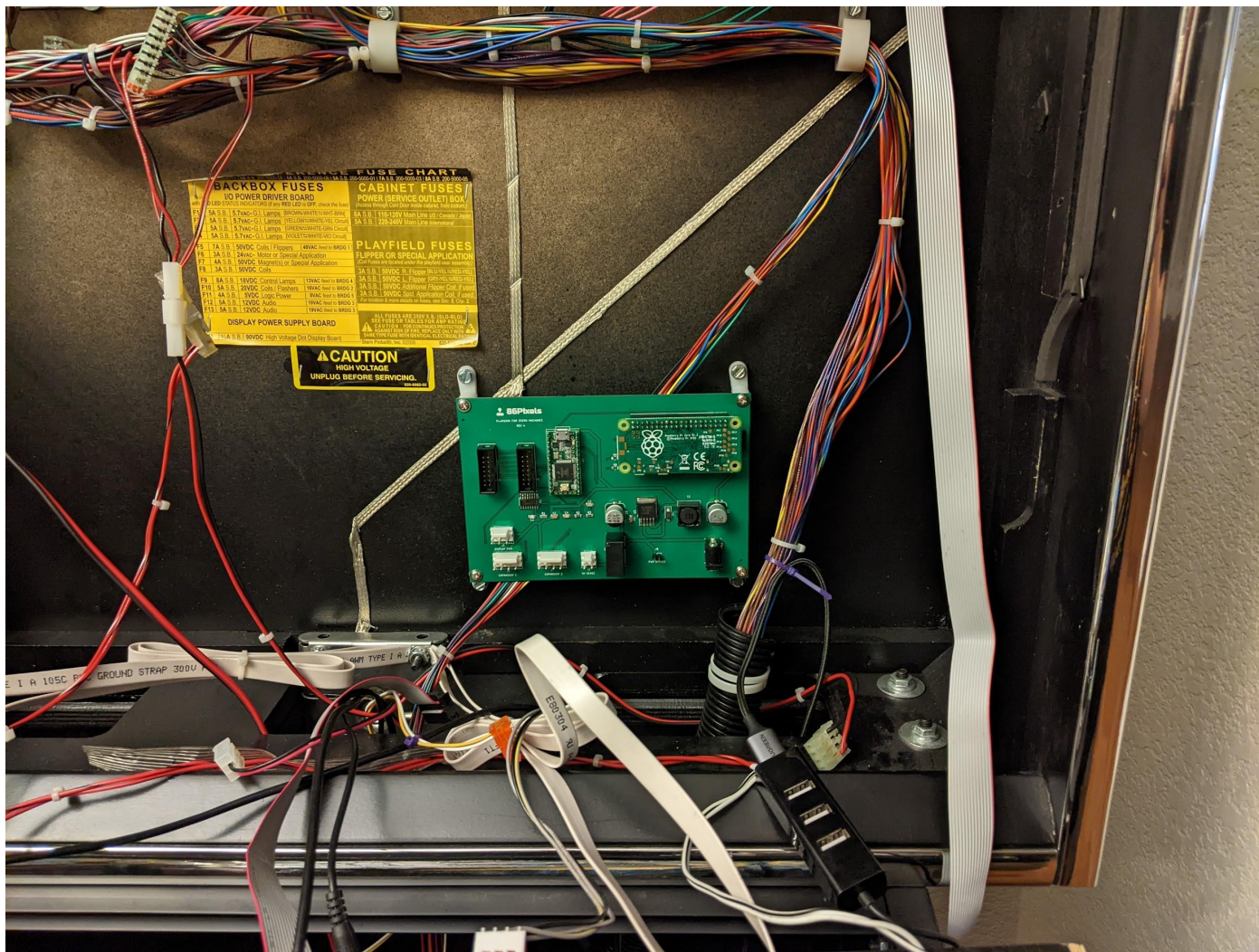
- G. Make sure the backboard is aligned with the plastic notches as shown by the red line below. This will keep the backboard centered with the playfield and ensures that it doesn't hit the cabinet bracing when the playfield is slid into the cabinet.



H. Replace the wood screws at the rear L brackets to anchor the back panel into place. Note that due to tolerances between games, these holes aren't tapped, so use of a drill is advised.

STEP 4 - INSTALLING THE CONTROLLER HARDWARE

- A. Mount the board and standoffs near the lower left corner of the cabinet head. Do not attempt to mount the standoffs separately from the board. Use the included hex wood screws to secure the standoffs to the head as pictured below:

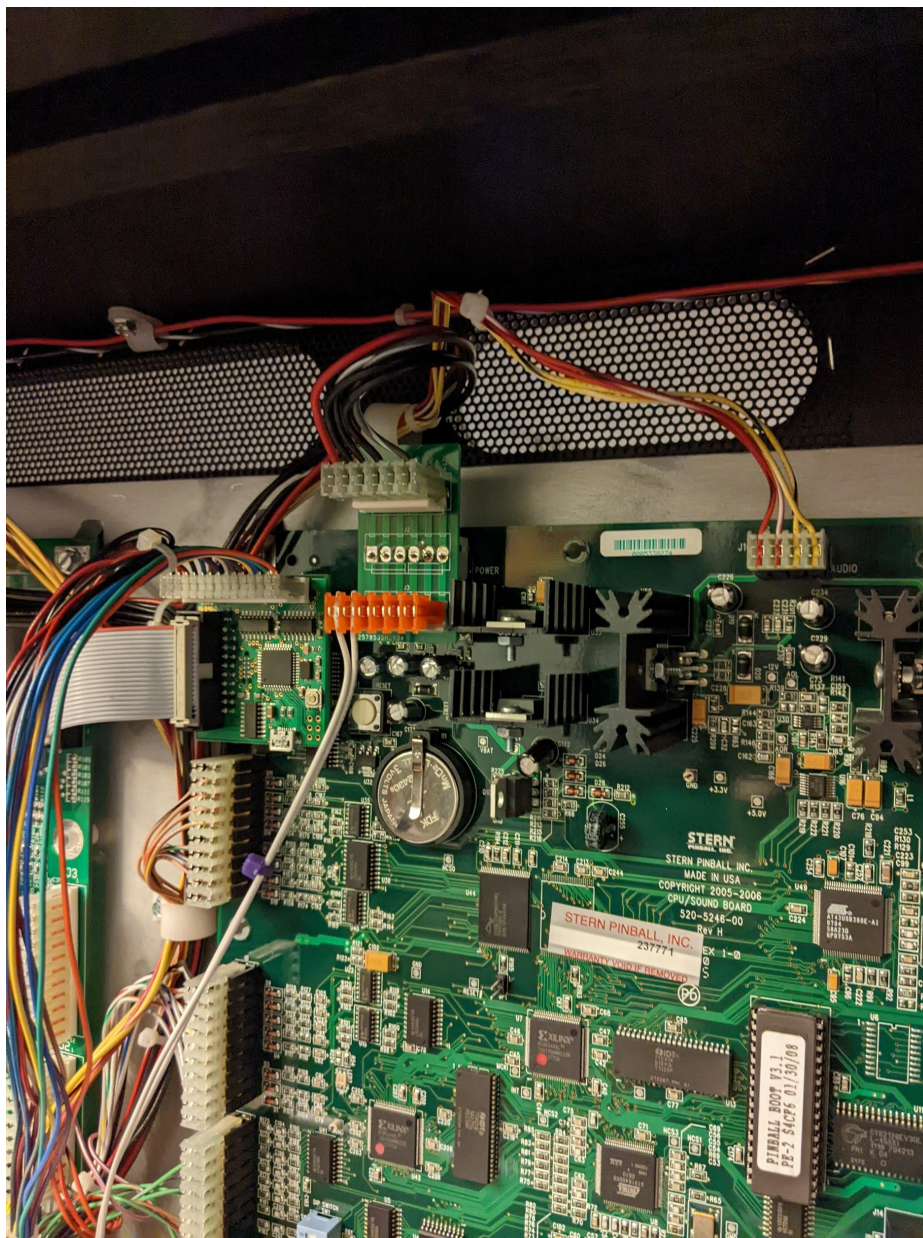


- B. Disconnect the factory DMD cable and plug it into the controller board at location J4 (red stripe down)
- C. Connect the supplied DMD cable to the controller board at location J1 (red stripe down) and connect the other end to the DMD.

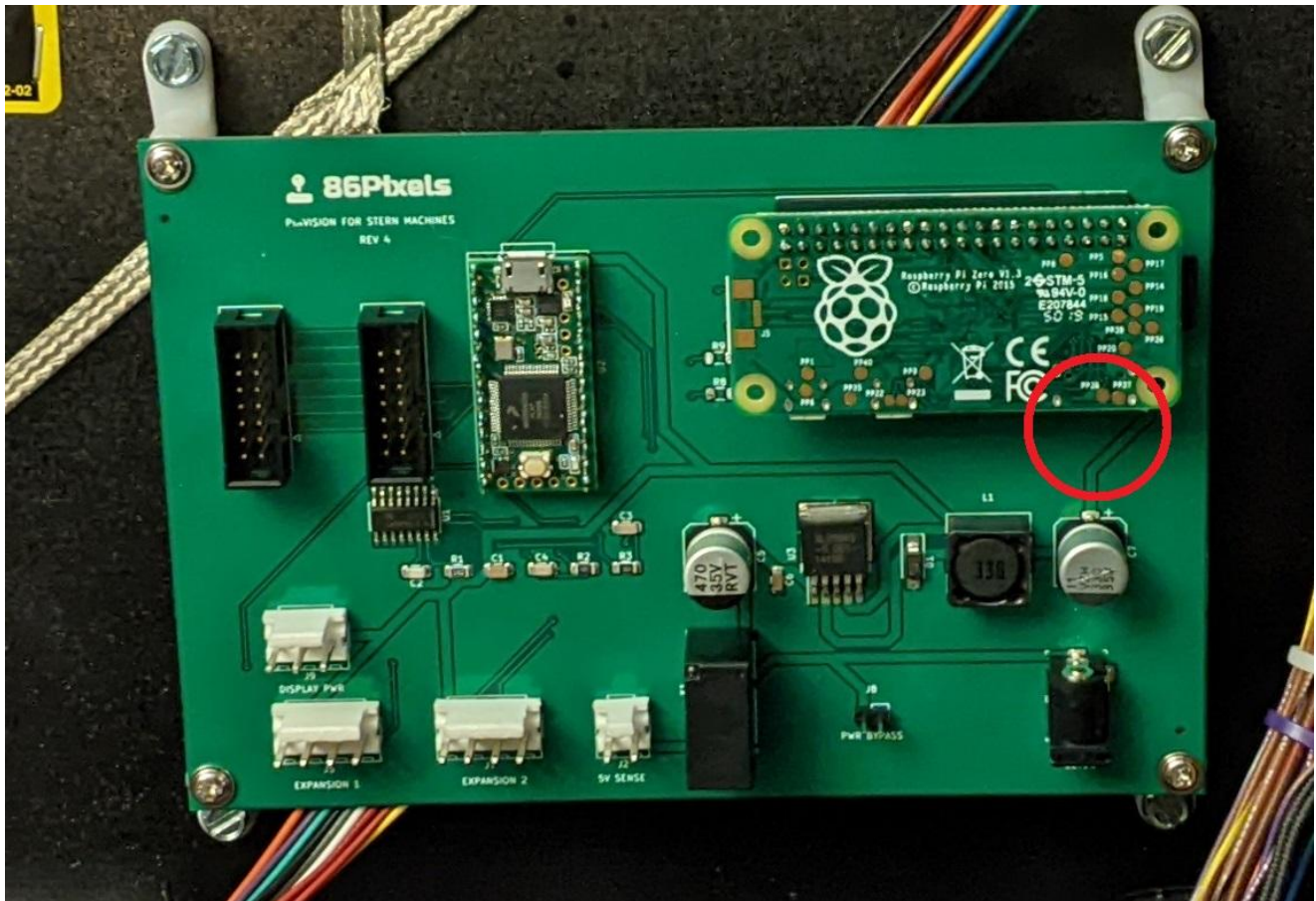
STEP 5 - POWERING THE UNIT

The Pinvision system is designed to operate via an isolated power supply to prevent system reset or overdraw issues. As such, the system only uses a 5V signal from the machine to energize a relay on the Pinvision control board. That relay provides 12V at 3 amps from the included power brick, which can be plugged into the service outlet or outside the game entirely. The mod will still turn on and off with the game regardless of whether or not the service outlet is constantly powered.

- A. Install the power sensing tap to the main motherboard PCB (J11) as shown below. The top connector on the piggyback PCB will house the original cable that connected to J11.



- B. Connect the 5V sensing cable (ITEM 10) to the lower 6 pin connector on the power tap PCB as shown above (orange connector). The 2 pin connector will plug into the Pinvision controller board at location J2 (5V SENSE)
- C. The 3 pin connector from the display panel will connect to port J9 (DISPLAY PWR) on the controller board
- D. Connect the mini HDMI cable that you fed from the display panel into the raspberry pi where outlined below. Note the connector is on the backside of the raspberry pi. **Be careful not to apply pressure to the SD card on the right side.**



- E. Connect the supplied 12V power brick into the pinball machine's service port (or available outlet outside of the machine). Use the supplied extension cable (item 12) to reach the cabinet head. Plug the barrel cable into the DC barrel jack on the controller board at J3 (12VDC).
- F. **If your unit came with a light bar, please plug the connector into the "EXPANSION 2" port**

MODIFYING THE ANIMATIONS

The Pinvision system allows you to modify any of the display graphics or animations by simply replacing or adding files to the predefined folders on the MicroSD card. Animations are simple mp4 files and are designed at 1366x768 resolution.

UPDATING THE SOFTWARE

From time to time, 86Pixels may release software updates to add new features or fix bugs. Software updates are simple to install. There are two main methods that you can use to update the software:

SD CARD BASED SOFTWARE UPDATES

The SD card can be removed from the upper right corner of the unit (CAREFULLY) and placed into any Windows, Linux or Mac OS computer using a SD card adapter or a USB card reader. Once inserted, the drive will be labeled "PINVISION". Other partitions may be present on the SD card, but those can (must) be ignored.

Download the update file (named displayupdate.bin) to the MicroSD card and save it in the root directory. This will be the same directory that houses files like "config.txt". DO NOT place the update in a subdirectory.

With the game OFF, reinsert the MicroSD card into the unit (remember the gold contacts on the card are facing toward you as you insert it). Be careful not to exert excessive force on the MicroSD card.

Power the game back ON. Once the unit boots, the update screen will show and should only take a few seconds. Once the update finishes, the unit will power cycle and boot into the attract mode.

USB BASED SOFTWARE UPDATES

A standard USB to Micro USB adapter cable is required for this update method.

Format a USB stick as FAT32 and place the pinvision update file on the USB stick's root directory (not a subdirectory). The file must be named pinvision.bin

With the game OFF, insert the USB stick (and adapter) into either of the MicroUSB ports on the bottom side of the compute unit (located on the Pinvision Controller Board).

Power the game back ON. Once the unit boots, the update screen will show and should only take a few seconds. Once the update finishes, the unit will prompt you to remove the USB stick and power cycle the game.

INSTALLING THE MOVING RECOGNIZER

If you ordered a moving recognizer with your unit, installation is simple and easy!

1. With the unit unplugged, gently move the clear recognizer base plate manually to one side with your hand. Doing so will expose 2 mounting holes through the plastic.
(This is the clear triangular plastic with 2 holes in it)
2. Remove your old recognizer toy from the old backboard using the 2 phillips head screws at the bottom.
3. Attach your recognizer toy to the clear triangular plastic using the same screws
4. Remove the plastic above the spinning disc on your game (#1 in the image below)
5. Replace the plastic with the new moving recognizer assembly
6. Disconnect the cable harness on the new moving recognizer at the black 3 pin connector. This makes the cable ends small enough to feed through the playfield
7. Feed the black cable end attached to the motor around the back of the motor and to the right using the playfield wire routing hole pictured at location #2 in the picture below.
8. Reconnect the cable harness underneath the playfield, making sure to match up the red, orange and brown wires on both sides.
9. Connect the 4 pin molex connector to the EXPANSION 1 port
10. The recognizer will automatically re-center itself when you power on the game

