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Take your time, follow the instructions, relax, and enjoy yourself!

WARNINGS: Perform installation with your pinball machine turned off and unplugged from AC power.



PinWoofers Spike-2 CDU Installation Instructions

- It is strongly recommended that you read this entire guide before you begin; the installation is quite easy but there are many steps, and decisions need to be made along the way.
- If you have a PinWoofers GT Amplifier, you MUST have an expander board delete kit installed in order for the CDU to work correctly:

<https://pinwoofers.com/pinwoofers-gt-spike-2-expander-board-delete-kit/>



PinWoofer Spike-2 CDU Installation Instructions

Below is the link to the installation video:

<https://youtu.be/ymH9QFtZdew>

Foreword

- In all cases there will be one unused cable that was supplied with your CDU kit.
- If you are installing your CDU into a game WITHOUT an existing PinWoofers super kit, you will not need the supplied 1.5ft TRS Male to TRS Male audio cable.
- If you are installing this into a game WITH an existing PinWoofers super kit, you will not need one of the two 7 pin rainbow jumper cables.
- Take note of this now and set aside the one cable you will not need.

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Locate CN6

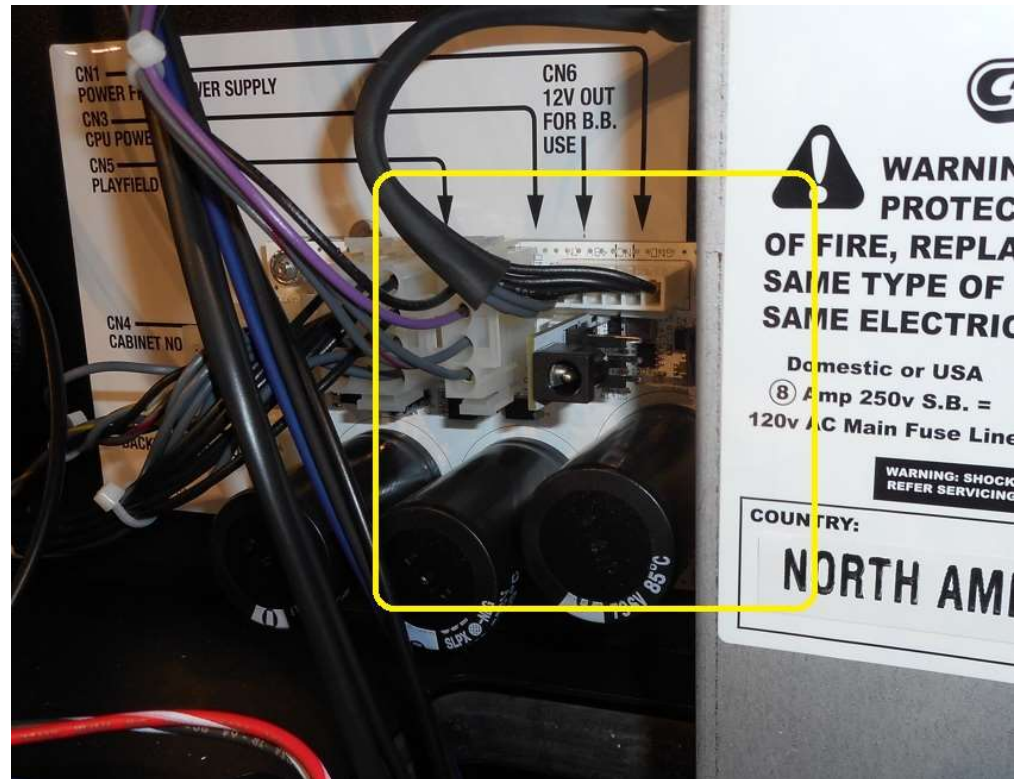
- Shown in the yellow box is the CN6 header.



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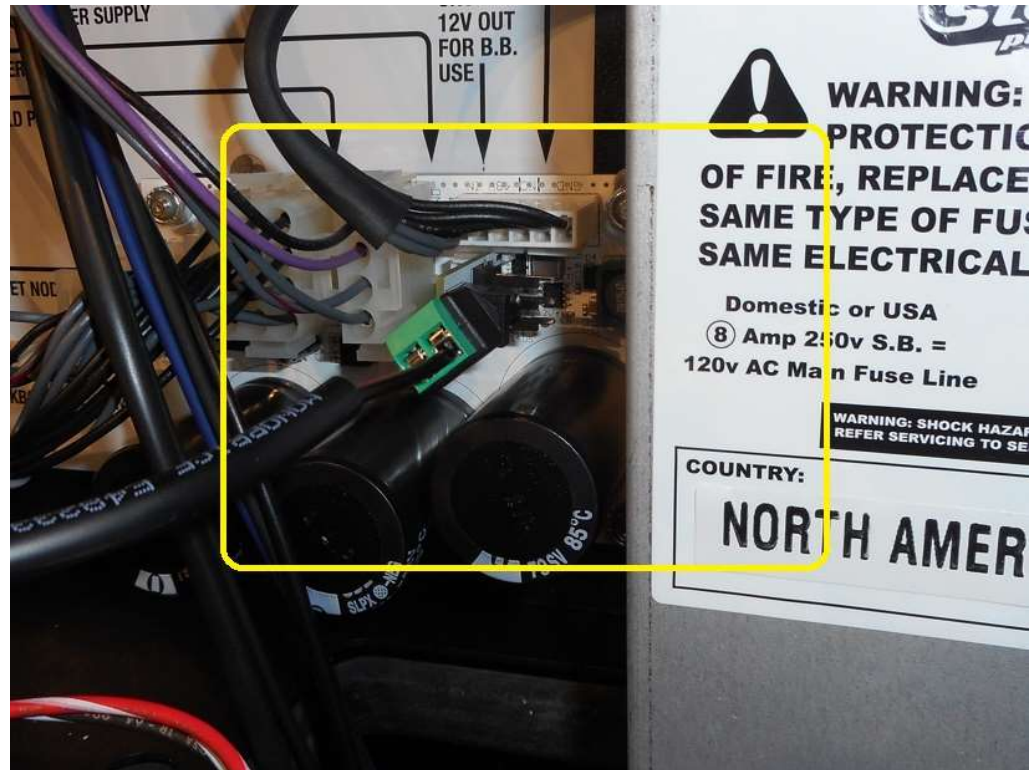
Install Power Board

- Plug the provided CDU Power Board into CN6 as shown.
- There is an auxiliary header located on the power board supplied, in case you already have an accessory occupying the CN6 factory header.
- DO NOT overload the CN6 supply.



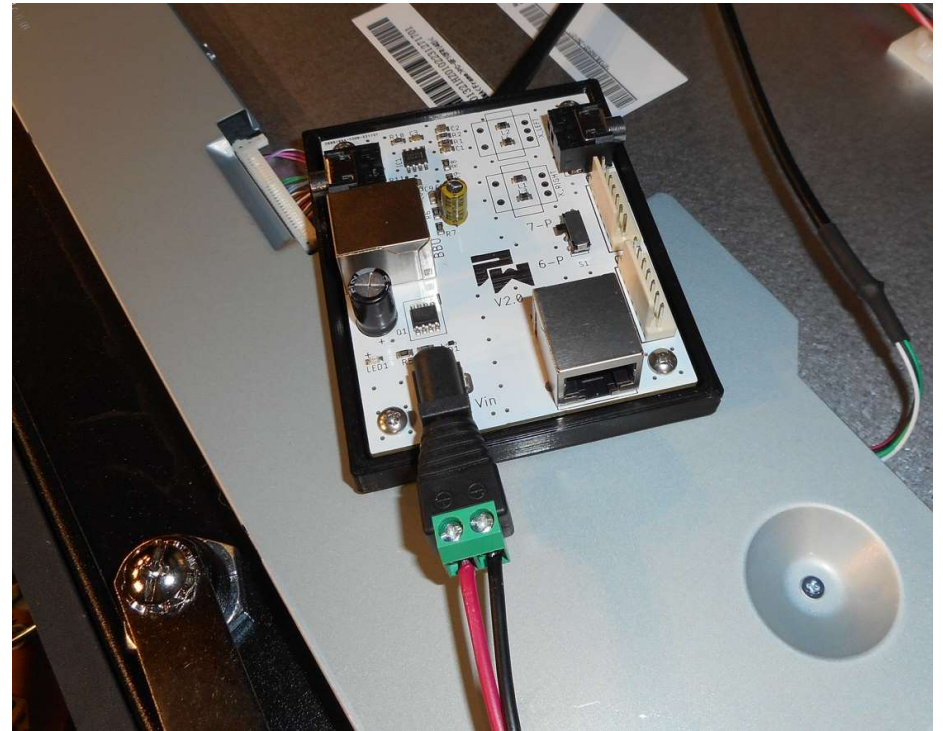
Plug Power Cable - 1

- Plug one end of the power cable into the power board as shown.



Plug Power Cable - 2

- Plug the other end of the power cable into the CDU Backbox Board as shown.



6-Pin versus 7-Pin

- The number of CN5 pins (6 or 7) determined in this step is needed in later steps.
- Below link is an overview of 6 versus 7 pin CN5 Spike-2 Headers.
- Please study this document and realize that there are exceptions, and this is not documented by the manufacturer.
- Failure to understand this can result in failure to correctly install your CDU:

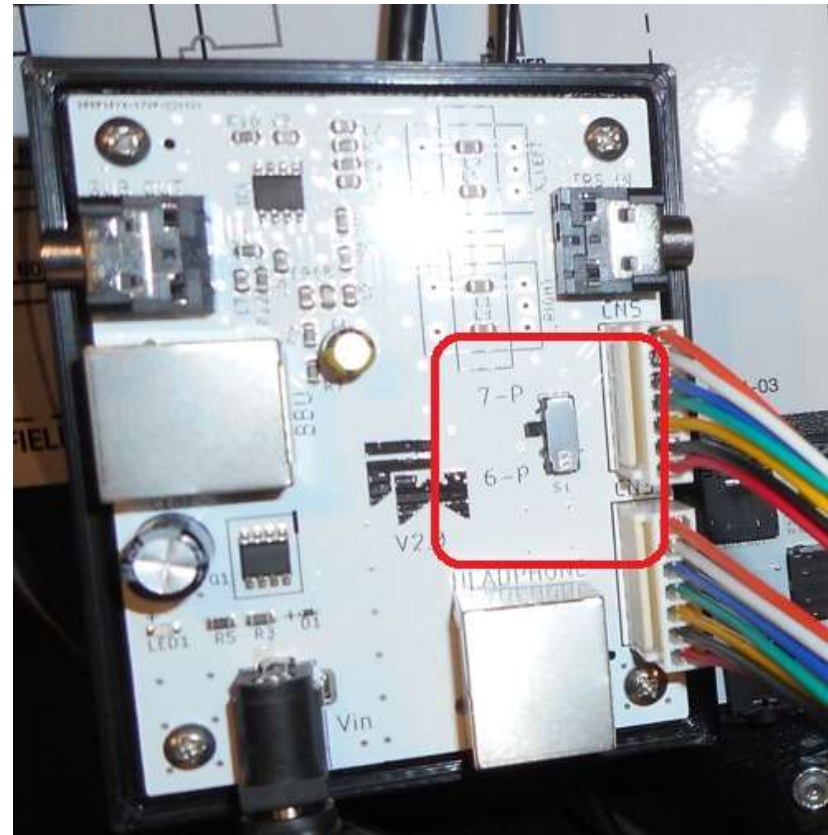
<https://pinwoofer.com/content/PW-Spike-2-6-pin-Versus-7-pin-CN5-Header.pdf>

Release Date	Title	CN5 Pin Count
2016-12	Batman (66 Limited Edition)	6-pin
2016-12	Batman (66 Premium)	6-pin
2016-12	Batman (66 Super Limited Edition)	6-pin
2017-02	Aerosmith (Pro)	6-pin
2017-03	Aerosmith (Limited Edition)	6-pin
2017-04	Aerosmith (Premium)	6-pin
2017-06	Star Wars (Pro)	6-pin
2017-08	Star Wars (Premium)	6-pin
2017-08	Star Wars Limited Edition	6-pin
2017-11	Guardians of the Galaxy (Pro)	6-pin
2017-12	Guardians of the Galaxy (Premium)	6-pin
2017-12	Guardians of the Galaxy Limited Edition	6-pin
2018-03	Iron Maiden Legacy Of The Beast (Pro)	mixed
2018-04	Iron Maiden Legacy Of The Beast (Limited Edition)	mixed
2018-05	Iron Maiden Legacy Of The Beast (Premium)	7-pin
2018-08	Deadpool (Pro)	7-pin
2018-09	Deadpool (Limited Edition)	7-pin
2018-09	Deadpool (Premium)	7-pin
2018-11	The Beatles (Diamond Edition)	7-pin
2018-11	The Beatles (Gold Edition)	7-pin
2018-11	The Beatles (Platinum Edition)	7-pin
2019-01	The Munsters (Pro)	7-pin
2019-02	The Munsters Limited Edition	7-pin
2019-03	The Munsters (Premium)	7-pin
2019-04	Black Knight Sword of Rage (Pro)	7-pin
2019-05	Black Knight Sword of Rage (Limited Edition)	7-pin
2019-05	Black Knight Sword of Rage (Premium)	7-pin
All Future Spike-2 Titles have 7-pin		

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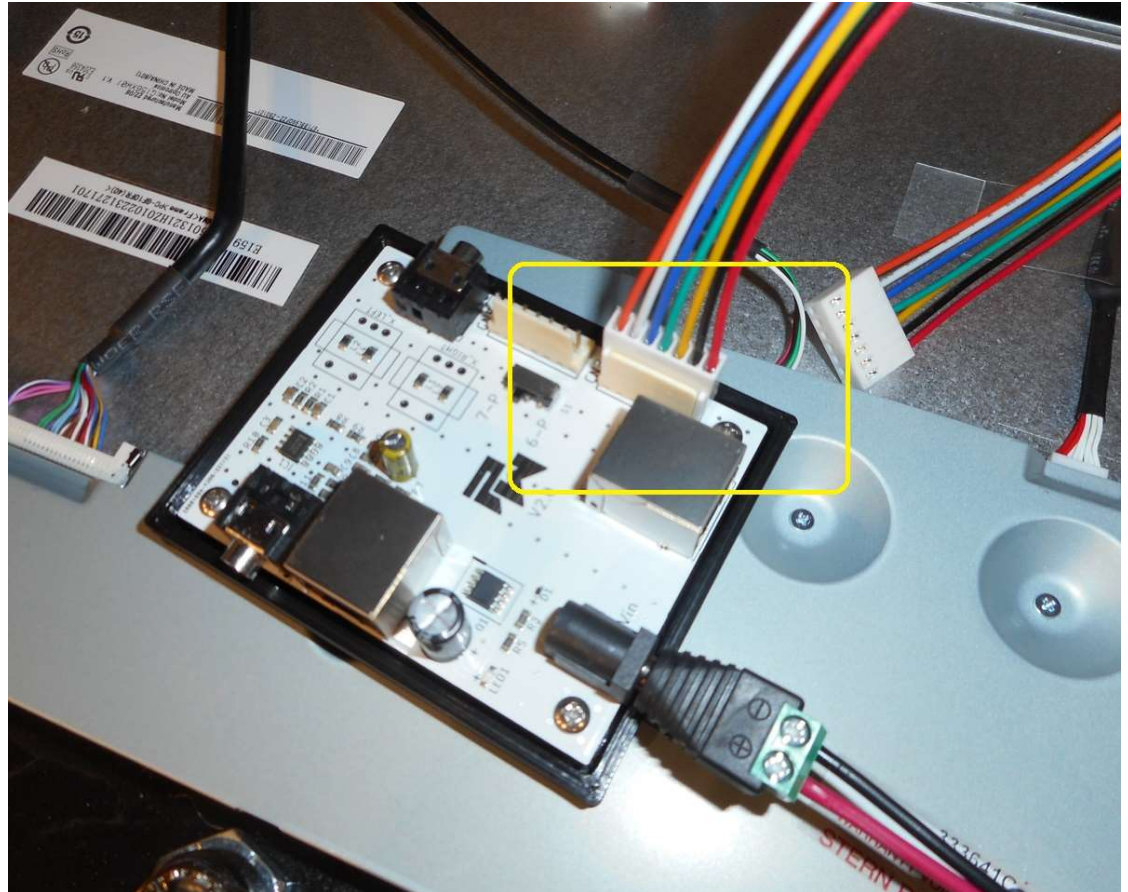
CDU Backbox Header Switch

- If you **DO** have a PinWoofers system installed, this step is a don't care (i.e., the setting of the 7-P / 6-P switch is a don't care). Continue to the next step.
- If you **DO NOT** have a PinWoofers system installed:
 - For a 6 pin CN5 Header, select "6-P".
 - For a 7 pin CN5 Header, select "7-P".



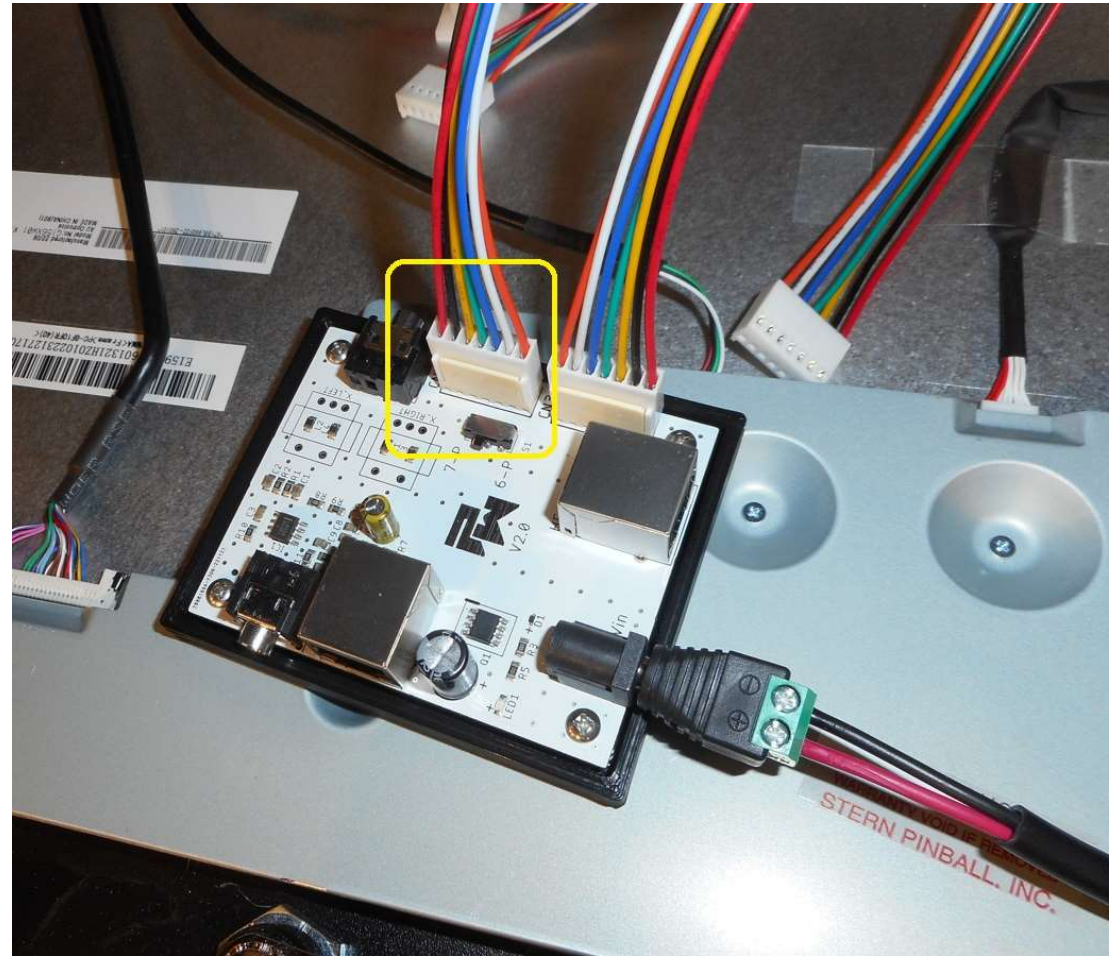
Plug to CN3 – CDU Backbox Board

- Plug a 7-wire jumper harness to the CN3 connector on the CDU Backbox Board as shown.



Plug to CN5 - Backbox Board

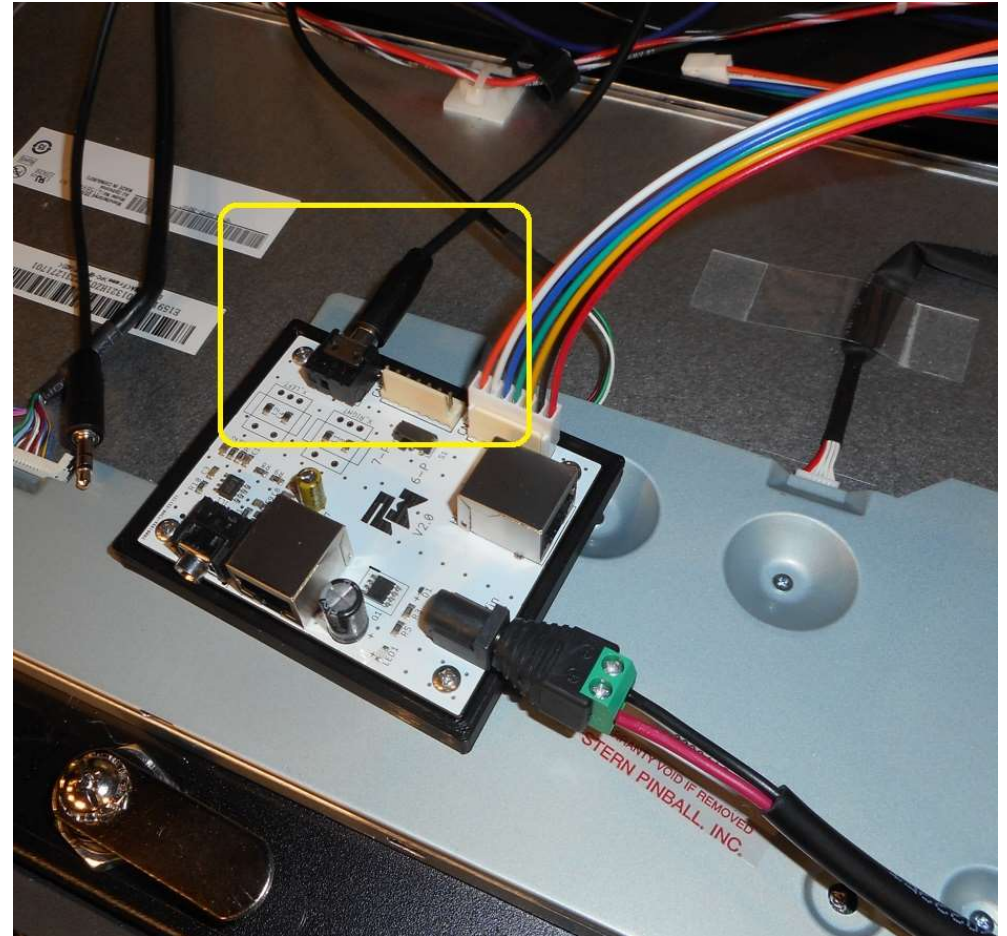
- If you **DO** have a PinWoofers system installed, continue to the next step.
- If you **DO NOT** have a PinWoofers system installed:
 - Plug a 7-wire jumper harness to the CN5 connector on the CDU Backbox Board as shown in the yellow box.



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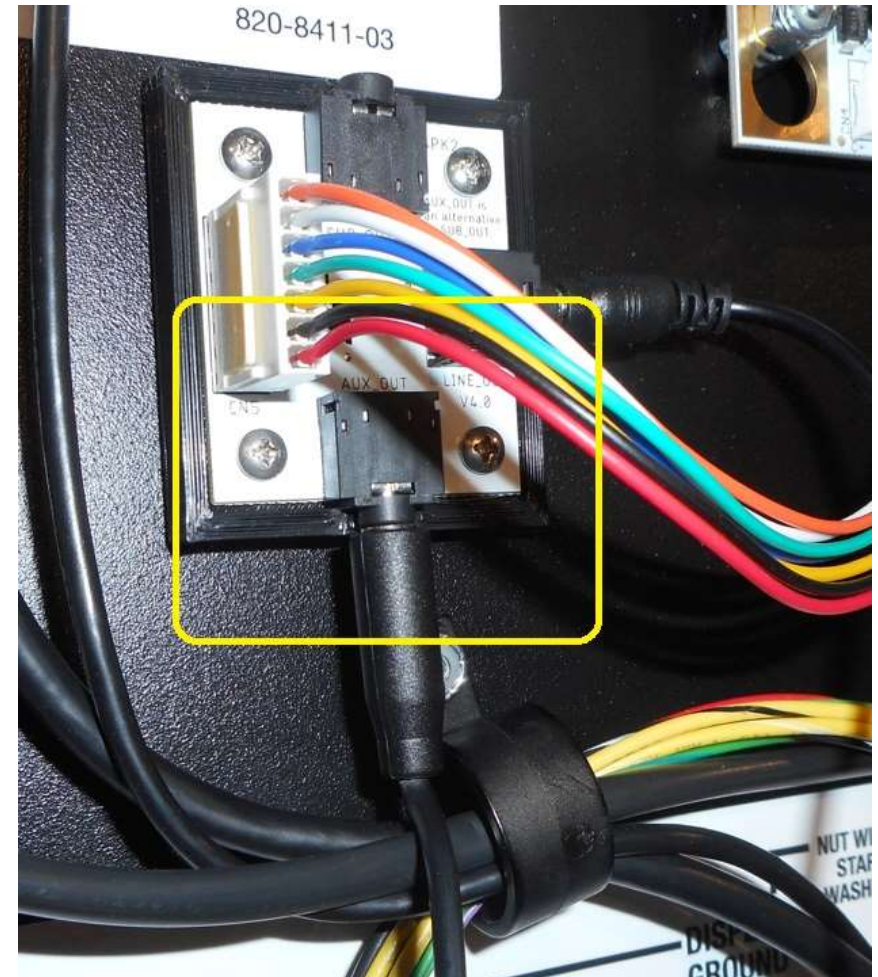
Plug TRS Cable to the Backbox Board

- If you **DO NOT** have a PinWoofers system installed, continue to the next step.
- If you **DO** have a PinWoofers system installed:
 - Plug one end of the 1.5ft TRS mini-plug to mini-plug cable to the TRS_IN jack on the backbox board as shown in the yellow.
 - The CN5 header on the CDU Backbox Board is not used.



Plug TRS Cable 6-P

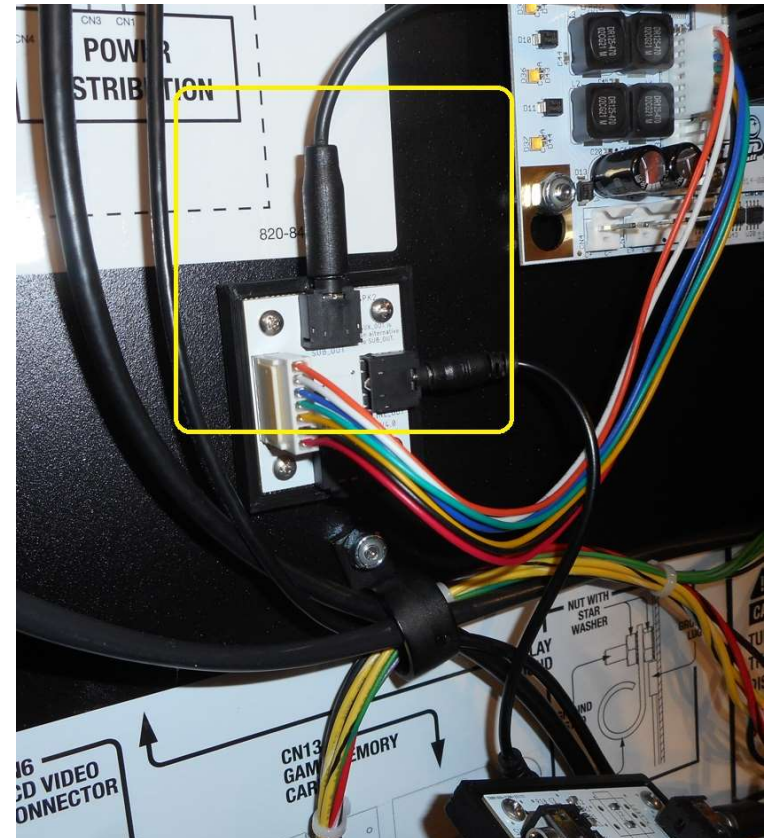
- If you **DO NOT** have a PinWoofers system installed, continue to the next step.
- If you **DO** have a PinWoofers system installed and if you are 6-P:
 - Plug the other end of the 1.5ft TRS mini-plug to mini-plug cable to the AUX_OUT jack on the PinWoofers Line Out Board as shown.



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Plug TRS Cable 7-P

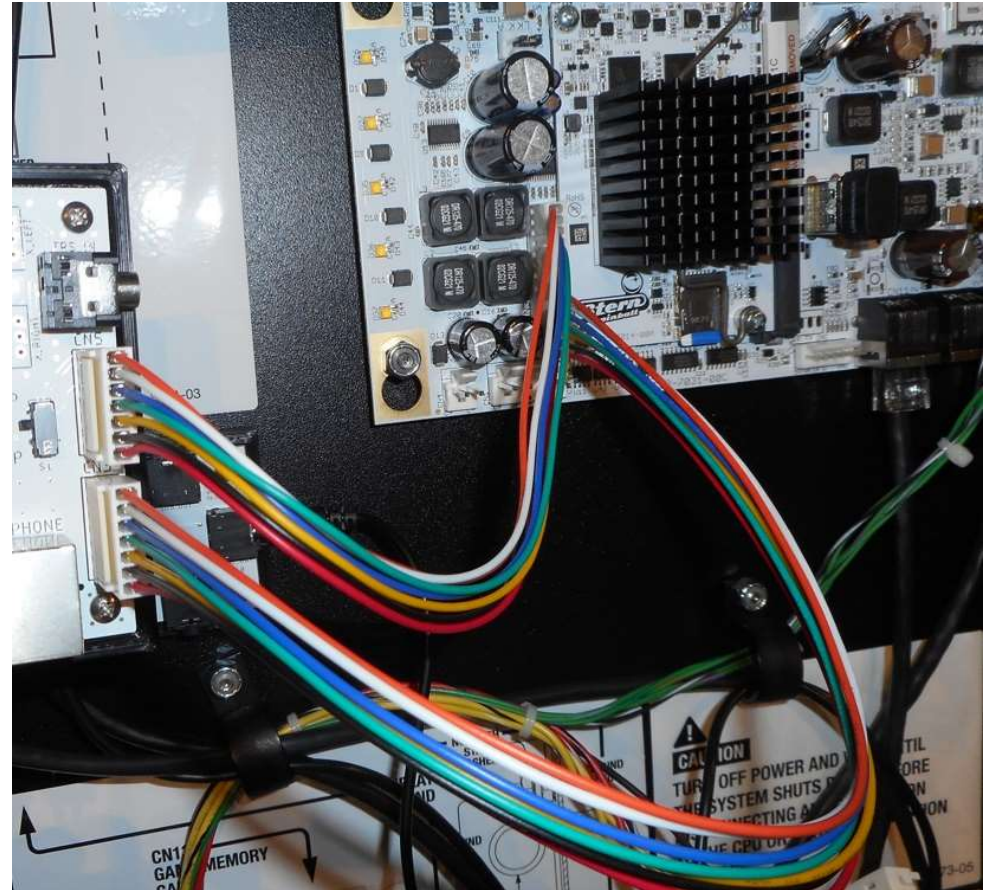
- If you **DO NOT** have a PinWoofers system installed, continue to the next step.
- If you **DO** have a PinWoofers system installed and if you are 7-P:
 - Plug the other end of the 1.5ft TRS mini-plug to mini-plug cable to the SUB_OUT jack on the PinWoofers Line Out Board as shown.



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CPU Node Connection

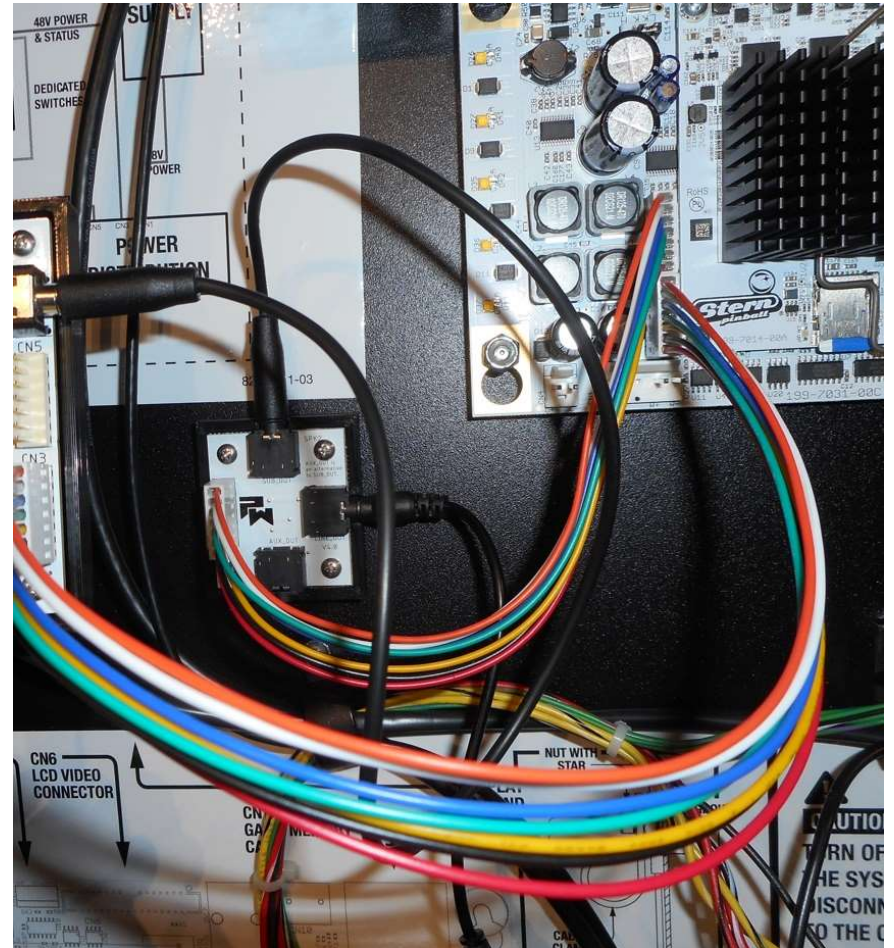
- Shown is the connection if you **DO NOT** have a PinWoofers System installed.
 - Both CN3 and CN5 jumper between the CDU Backbox Board to the CPU Node Board as shown:
 - CN5 to CN5
 - CN3 to CN3



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CPU Node Connection

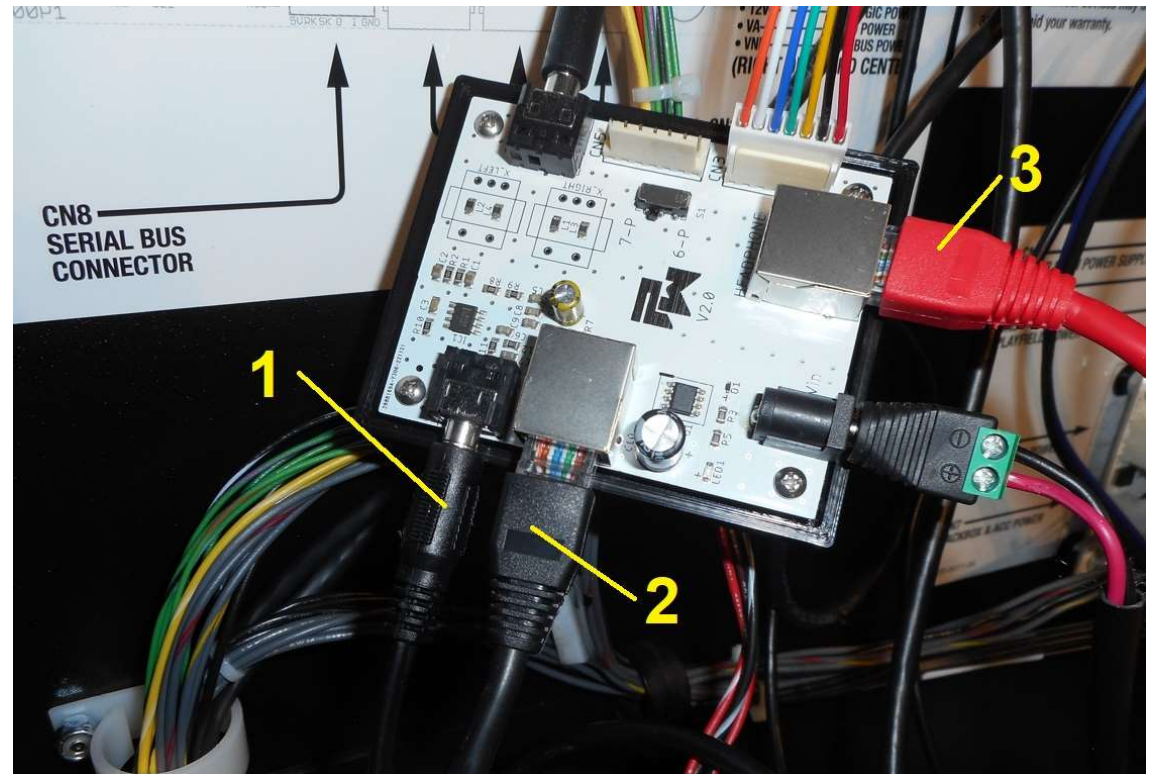
- Shown is the connection if you **DO** have a PinWoofers System installed.
 - CN5 jumps between the PinWoofers **Line Out Board** and Spike-2 CPU Node Board (as before).
 - CN3 jumps between the **CDU Backbox Board** and the Spike-2 CPU Node Board.
 - (The 1.5ft Male to Male TRS Mini-Cable connection between the CDU SUB_OUT Jack and the PinWoofers Line Out Board jack is already complete.)



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Complete CDU Backbox Board Connections

1. If you are using an external subwoofer, plug its cable as shown. Run the cable out of the machine to your external subwoofer.
 2. Plug the black ethernet cable to the BBU jack as shown.
 3. Plug the red ethernet cable to the HEADPHONE jack as shown.
- Route both ethernet cables down to the cabinet and out the coin door opening.
 - Leave enough slack to manage these cables in such a way that the head can be moved to its down / transport position without creating tension on any cables.



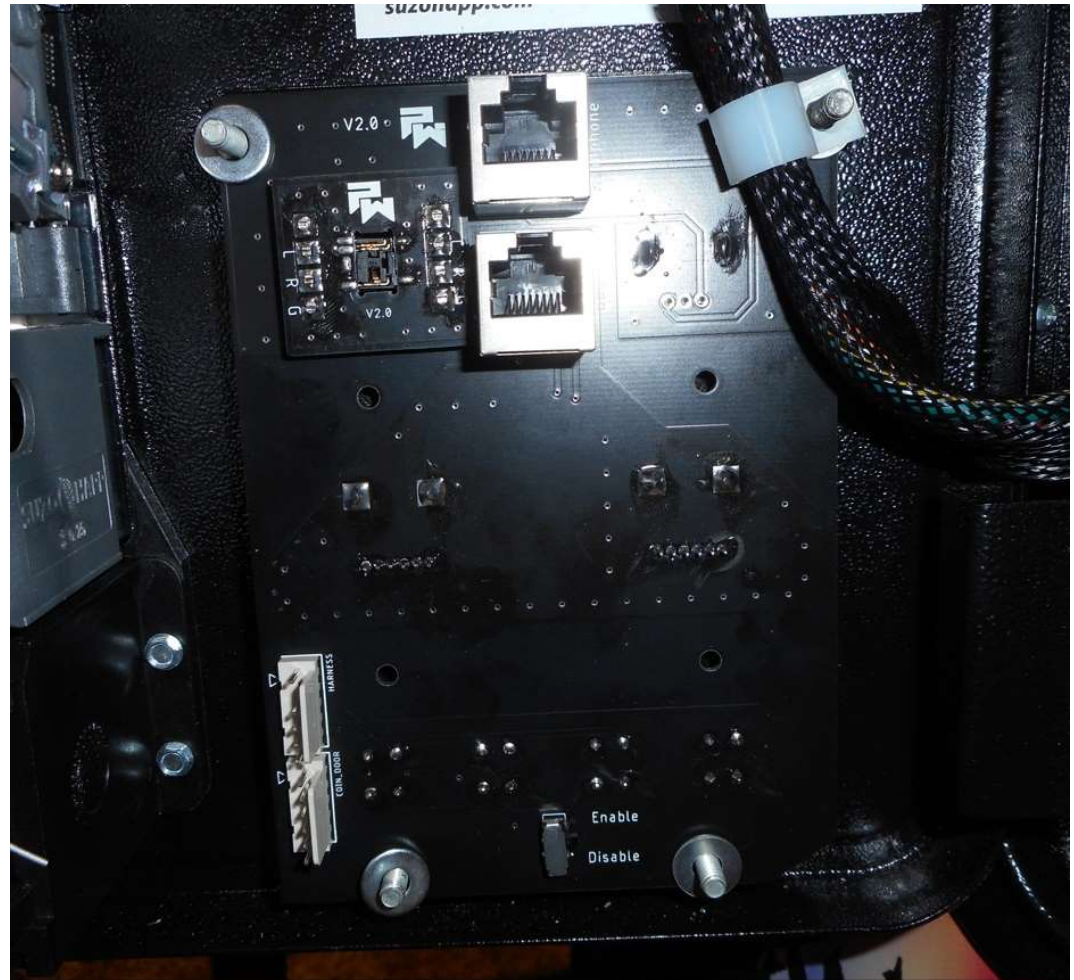
Coin Door Dollar Bill Validator Plate

- Locate the Coin Door Dollar Bill Validator Plate as shown to the right.
- Remove the nuts and plate.
- Do not discard the nuts as you will re-use them in a later step.
- You will not re-use the nylon spacers.
- Save the validator plate and nylon spacers in case they are needed in the future.



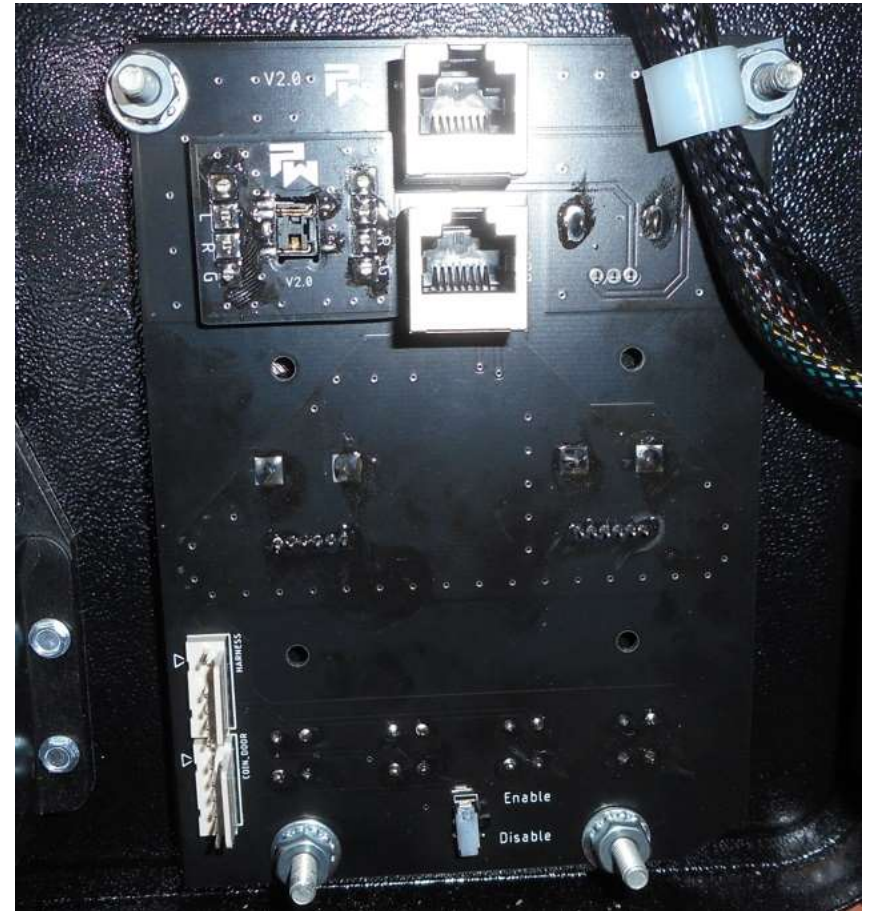
Place the CDU Coin Door Board

- Place the CDU assembly over the four coin door studs.
- Place the supplied flat washers over the studs as they protect the PCB from being scratched. This is critical.
- If there is a wire loom like the one shown in the upper-right corner of the image, replace it to the same stud.



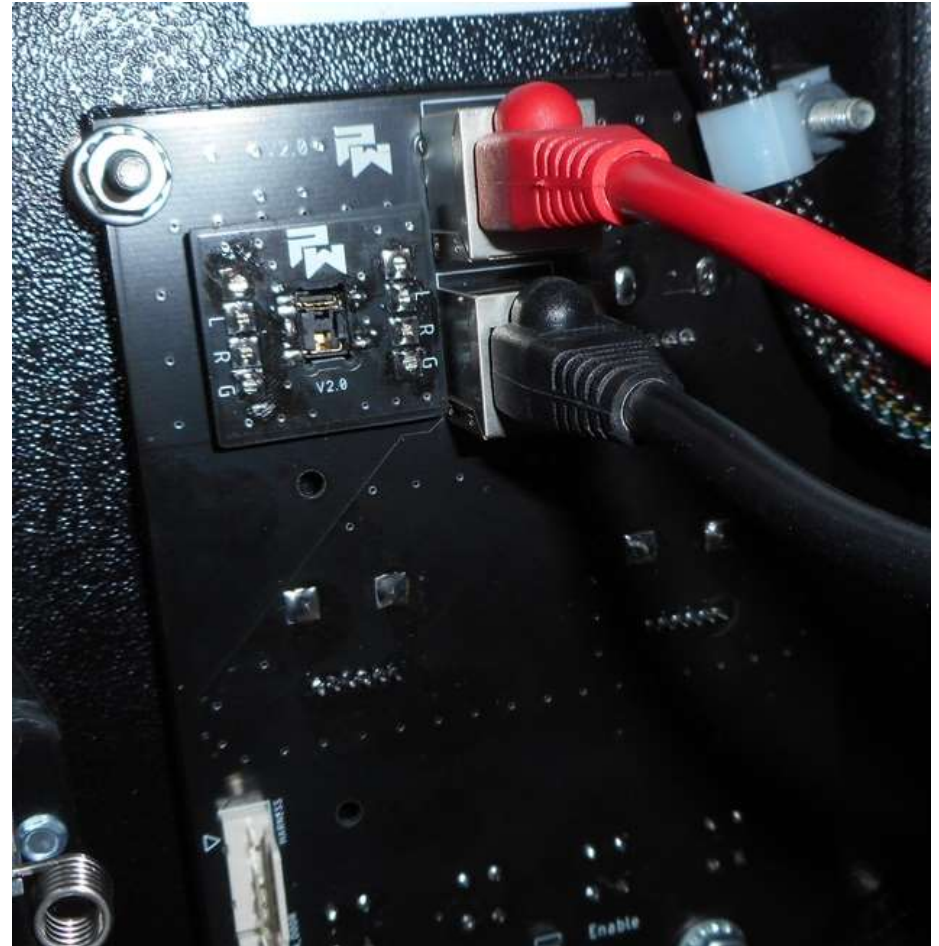
Secure The CDU Coin Door Board

- Replace the four nuts over their corresponding studs.
- Shown are the nuts installed over the flat washers from a previous step.
- Gently hand tighten and do not over tighten:
 - DO NOT “squeeze” the CDU Coin Door Board by over-tightening the nuts.
 - Get the nuts secure with fingertip strength.
 - The nuts have integrated tooth washers that will tightly secure the board with very little tightening force.



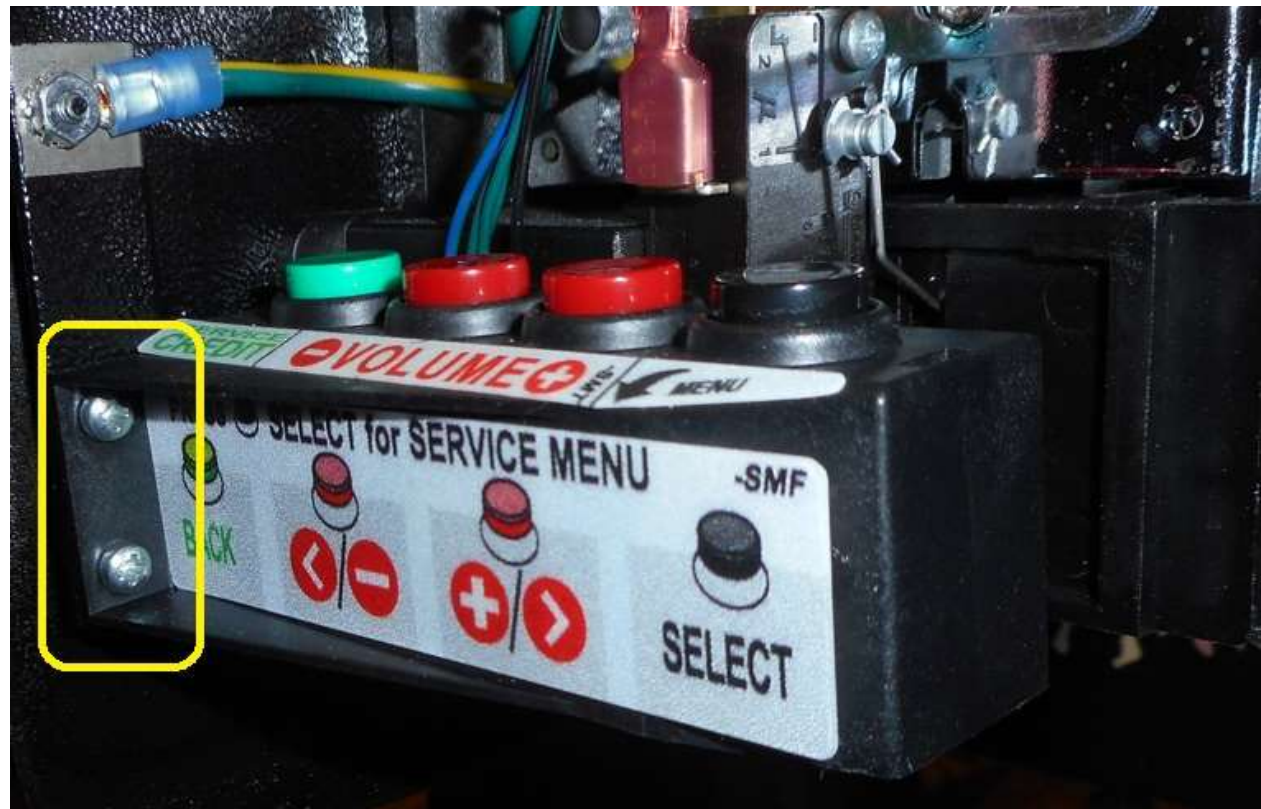
Plug the Ethernet Cables to the CDU Coin Door Board

- Plug the cables as shown:
 - Red to HEADPHONE
 - Black to BBU



Remove Service Menu Button Panel

- Loosen the two screws shown in the yellow box.
- Remove the Panel.



Remove the Service Menu Harness Connector

- Un-plug the connector shown in the image.



Install the new Service Menu Harness

- Replace the factory Jumper Harness with the supplied 6-wire Jumper Harness as shown.



Replace Panel and Route Factory Harness

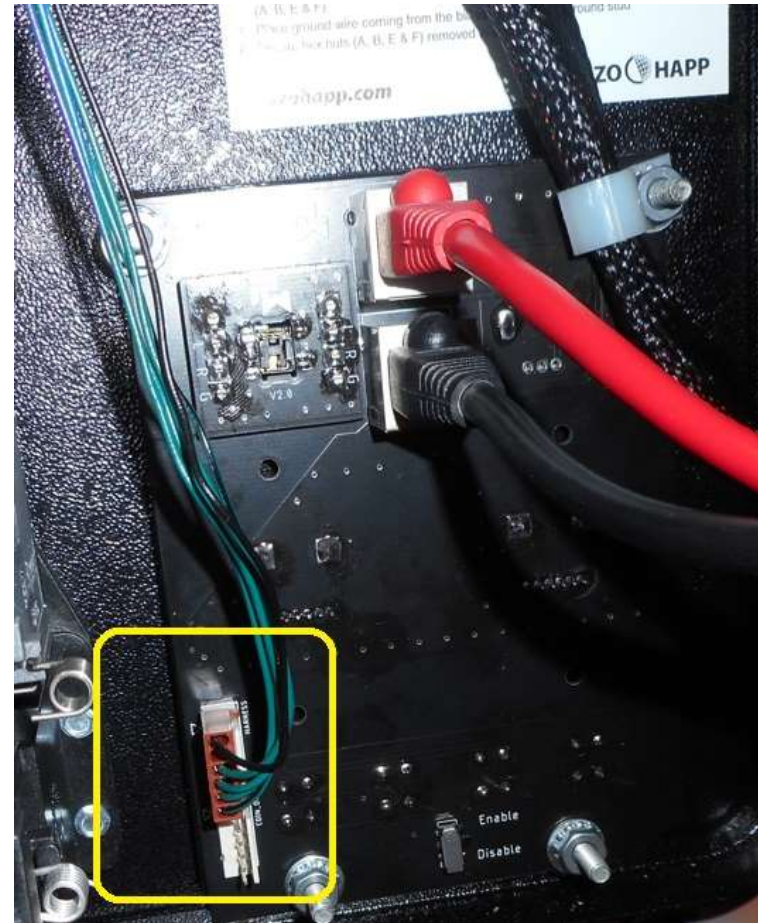
- Replace the service menu button panel as shown in the yellow box.
- Route the factory service menu panel harness to the opposite side of the coin mechanisms:
 - You will need to CAREFULLY cut some of the factory cable ties in order to liberate the factory service menu harness as you move it.
 - Use extreme caution and DO NOT accidentally cut any of the factory wires.
 - Replace the factory cable ties with new ties as you practice good cable management.



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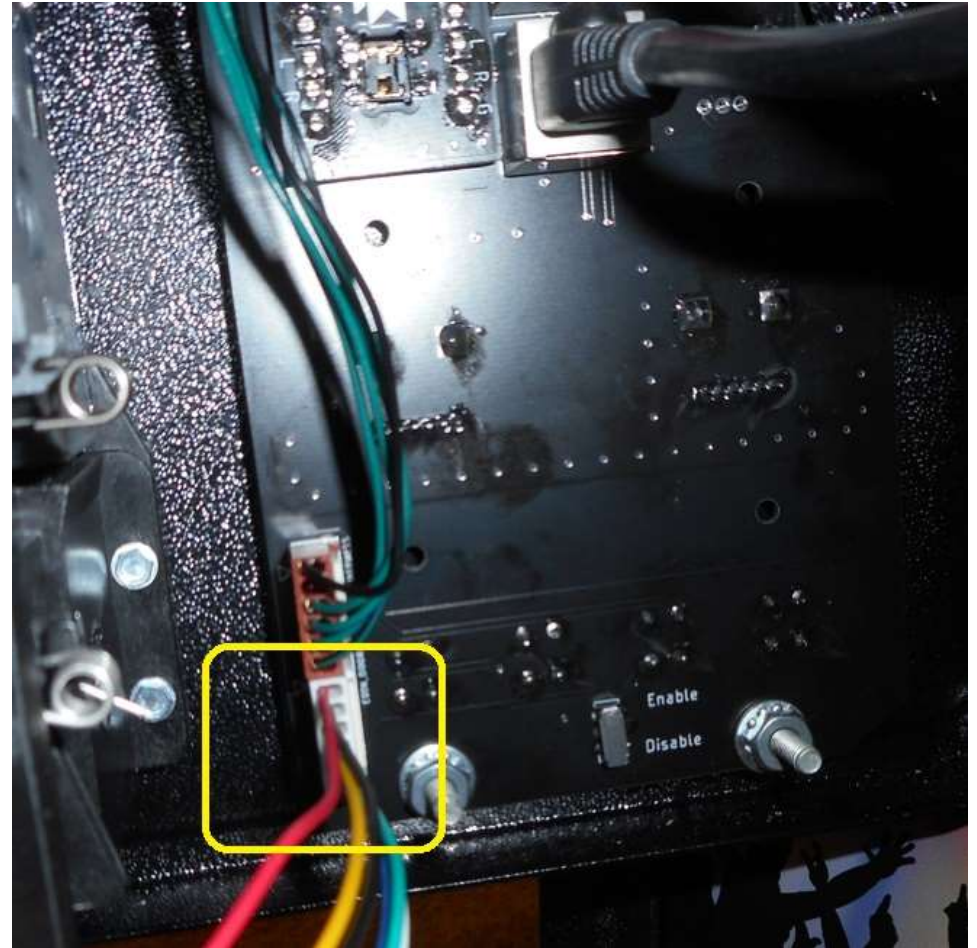
Plug the Factory Harness

- Plug the factory service menu harness to the HARNESS header on the Coin Door Board as shown.
- This plug is keyed to the header on the CDU Coin Door Board; be gentle and avoid damage to the header.



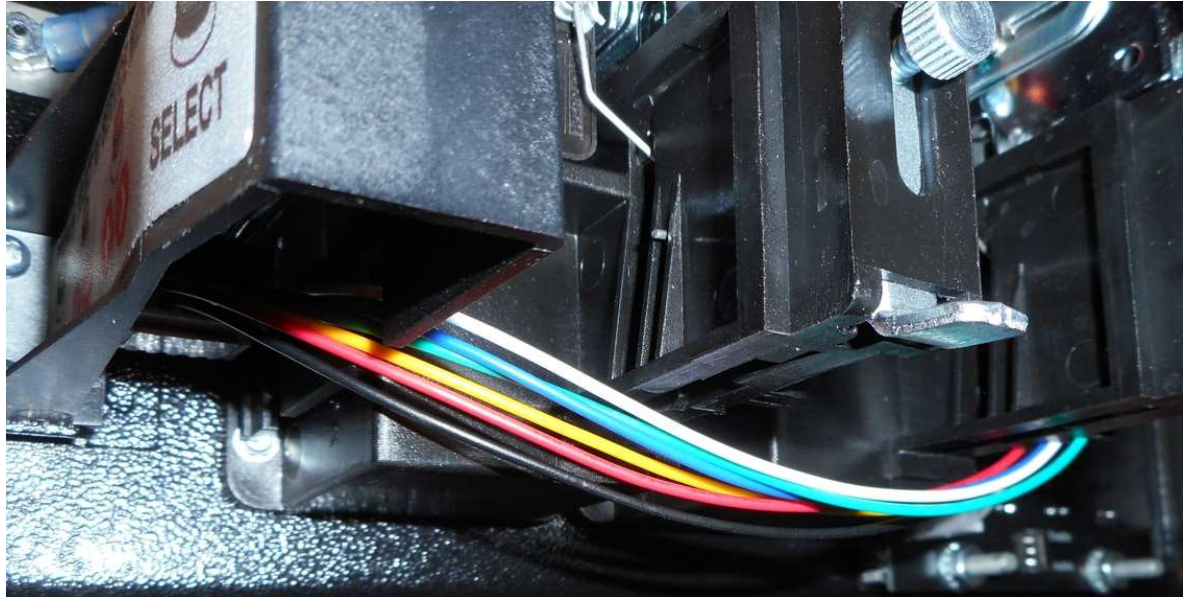
Plug the New Service Button Harness

- Plug the new 6-Pin harness into the COIN_DOOR header as shown.
- This plug and header are NOT keyed so you will need to align the plug guides to the header tab so do not force it. Be gentle and avoid damage to the header.



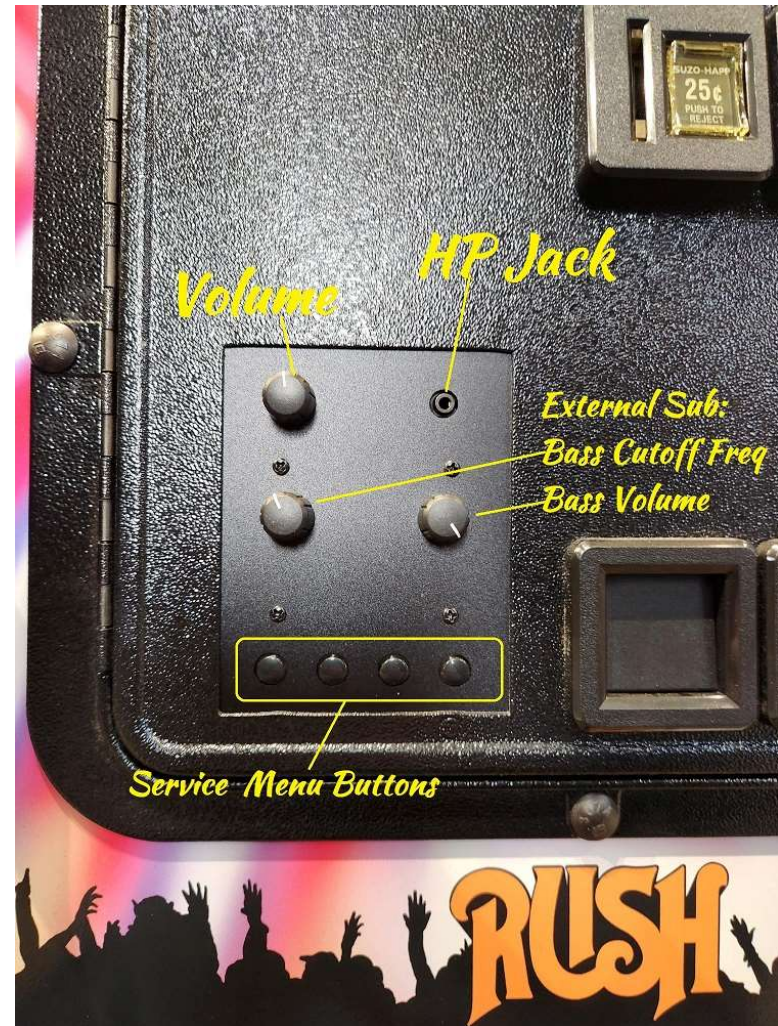
Cable Management

- Route the new 6-wire harness either under or behind the coin mechanisms.
- Use cable ties to secure the harness (and remove any slack) so it does not interfere with the closing of the coin door.



Controls and Features

- Shown in the image are the features provided by the CDU.



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Spike-2 Service Menu Setup

- This step is required to configure your machine to work as desired with the CDU:

- CDU Master Volume Knob Behavior:

↳ **SERVICE MENU**

↳ **ADJ**

↳ **S.P.I.**

↑↓ **FRONT VOLUME KNOB** +↵

↑↓ **DISABLED** +↵ (Ignore the Front Volume Knob)

↑↓ **HEADPHONES VOL. ONLY** +↵ (Front Volume Knob Controls only the Headphone Volume)

↑↓ **HEADPHONES + CAB. VOL.** +↵ (Front Volume Knob Controls Both Speaker and Headphone Volume)

- CDU Headphone Plug Behavior:

↳ **SERVICE MENU**

↳ **ADJ**

↳ **S.P.I.**

↑↓ **MUTE IF HEADPHONES DETECTED** +↵

↑↓ **YES** +↵ (Mute the Machine Speakers if Headphones are Plugged into the Headphone Jack)

↑↓ **NO** +↵ (DO NOT Mute the Machine Speakers if Headphones are Plugged into the Headphone Jack)

- There are some additional Headphone and Speaker Volume Settings in:

↳ **SERVICE MENU**

↳ **UTIL**

↳ **VOL**

↑↓ **ADJUST HEADPHONES VOLUME** +↵ (Adjust the Headphone Volume Level via Menu)

↑↓ **ADJUST MIN HEADPHONES VOL LEVEL** +↵ (Limit the Minimum Headphone Volume Level)

↑↓ **ADJUST MAX HEADPHONES VOL LEVEL** +↵ (Limit the Maximum Headphone Volume Level)



Disable External Service Menu Buttons

- If desired, the service menu buttons feature can be disabled using the switch on the back of the CDU Coin Door PCB as shown.



Subwoofer Connection

- Route the 12ft SUB_OUT cable out the back of the cabinet (through a ventilation hole) and plug into your subwoofer.
- It is recommended that you run the external subwoofer volume (and low pass / bass cutoff frequency) around mid-deflection to start with.
- External Volume and low pass / bass cutoff frequency are now controlled by the CDU.
- It is recommended that you enable the auto power to on so that your external subwoofer turns off after a period of no signal at the input.
- If you have a phase control start with 180° to begin with. You can always toggle this when fine tuning and determine which setting has the better sound.



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You have successfully installed the PinWoofers CDU