

**Stern - 2016
Ghostbusters (GB)**

Sky Mod v1

The Gozerian “Sky Mod” is hand crafted in Australia by a GB owner for GB owners around the world who love their game and want to transform the backboard of the playfield from a floating ghost trap into the active Gozerian Storm that constantly rumbles with ghost lighting. This mod is a relatively simple one to fit - no soldering, no complex tools and no removal of ramps - just follow the detailed instructions to install.



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1 - Mod Parts

When you unpack your mod, you will find the following components with the mod already pre-assembled (see photo below):

- 1 x **Sky Mod Kit** - (take care of the black painted cloud lens as it is resin - do not drop)
- 1 x **2mm Allen / Hex Key** - (to suit the screws that secure the PCB in case you need to remove for whatever reason)

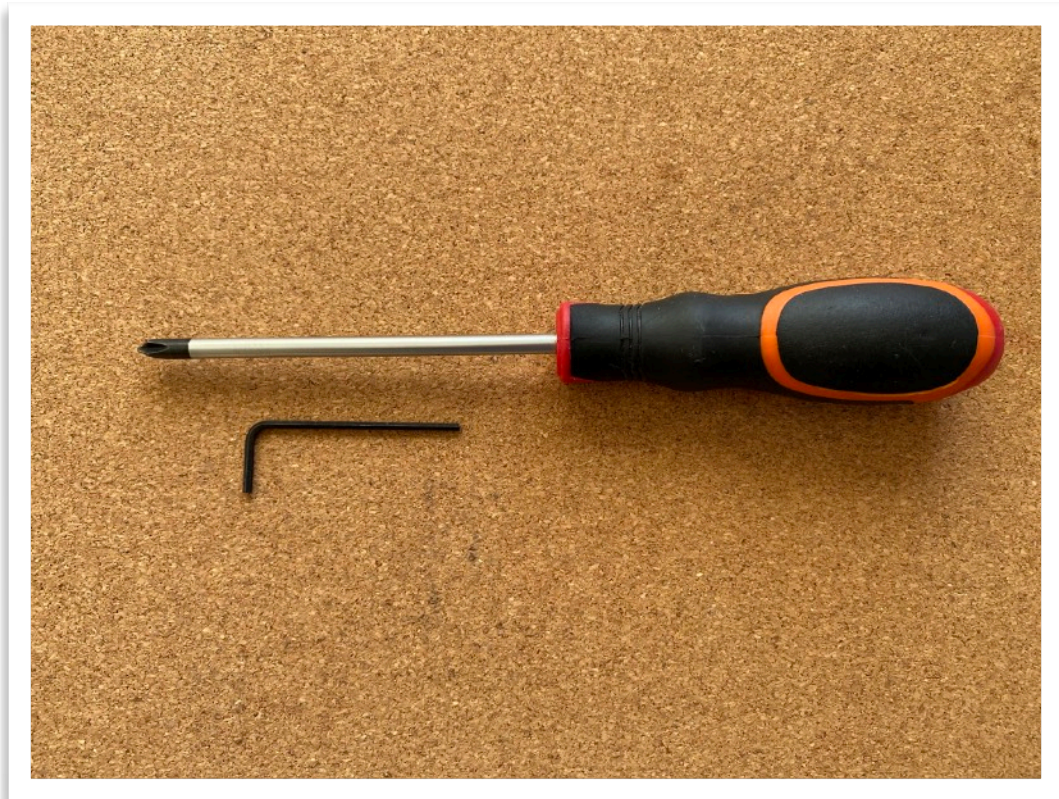


2 - Tools and Safety Notes

Tools necessary to install the mod

1 x Phillips screwdriver (is not provided)

1 x 2mm metric Allen / Hex key (provided in the kit)



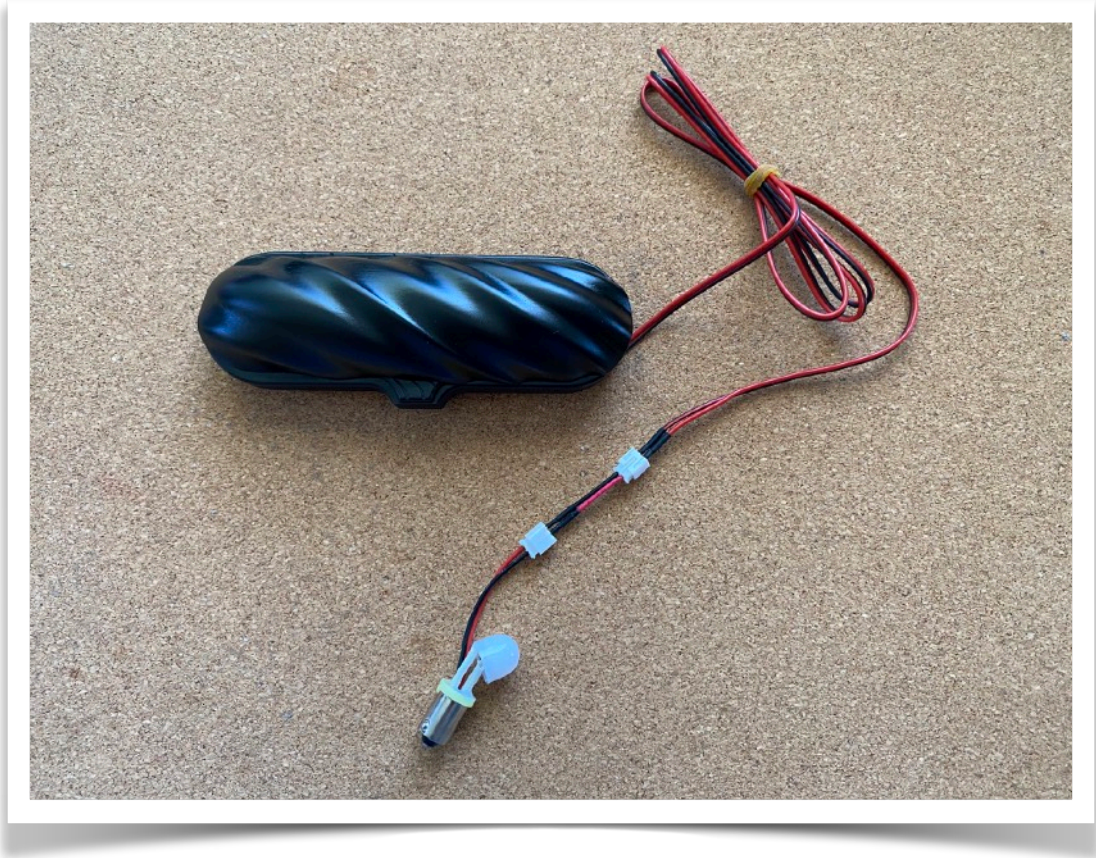
SAFETY NOTES:

Make sure that your machine is powered off and the power cord running from your machine to the wall outlet has been turned off / disconnected to remove all risk of electrocution.

Read through all these instructions carefully & completely before attempting the installation of this enhancement. Although you may know your machine inside and out, there are a few things to consider before proceeding.

3 - Mod Pre-assembly

Your mod is supplied pre-assembled to save you time making the install very simple.



4 - Game Preparation

So remove the following:

- lockdown bar
- playfield glass
- playfield out on to it's pegs or playfield brackets
- Remove all the balls in the game as you will need to lift the playfield up to connect the mod lead to a GI socket later in the assembly.



5 - Remove the Ghost Trap Plastic

Remove the Ghost Trap Plastic with the 2 higher placed screws that hold it on the backboard. Set these 2 screws aside as you will be using this to fasten the Sky Mod main bracket to the backboard.

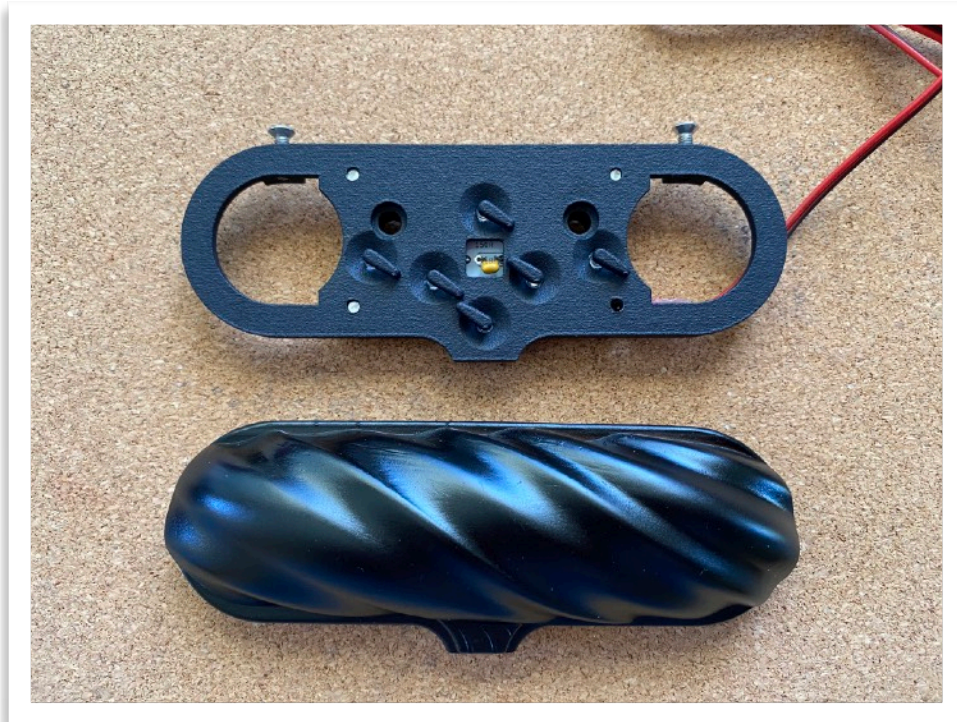
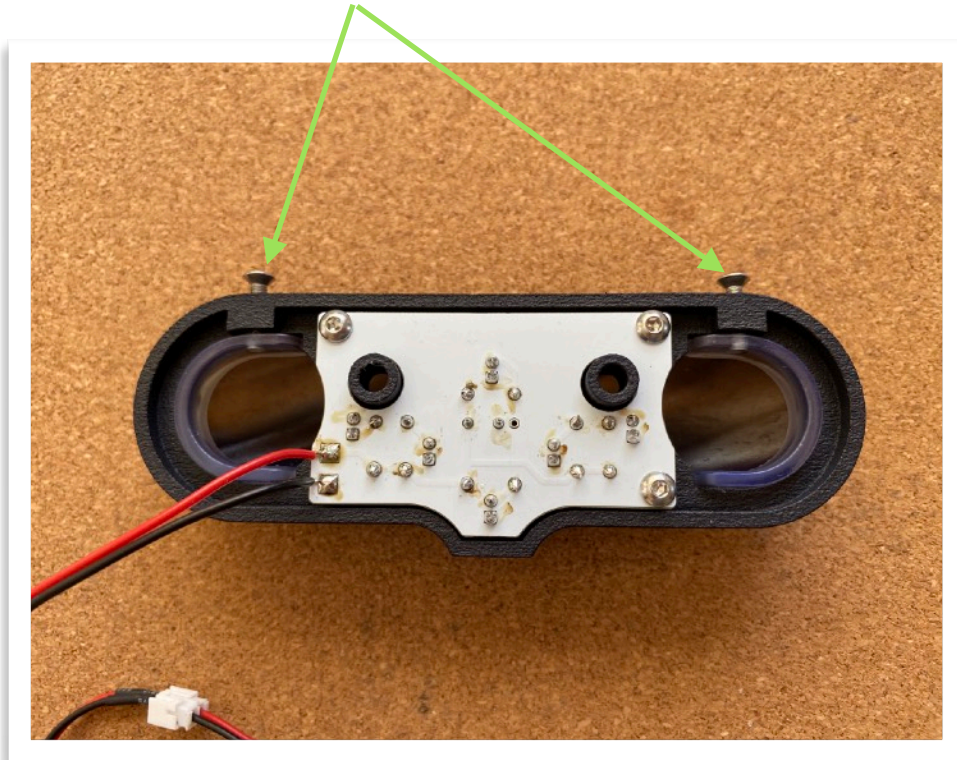


This is how the backboard looks with the Ghost Trap plastic removed. Simply bag this plastic assembly for safe keeping and store inside your game.

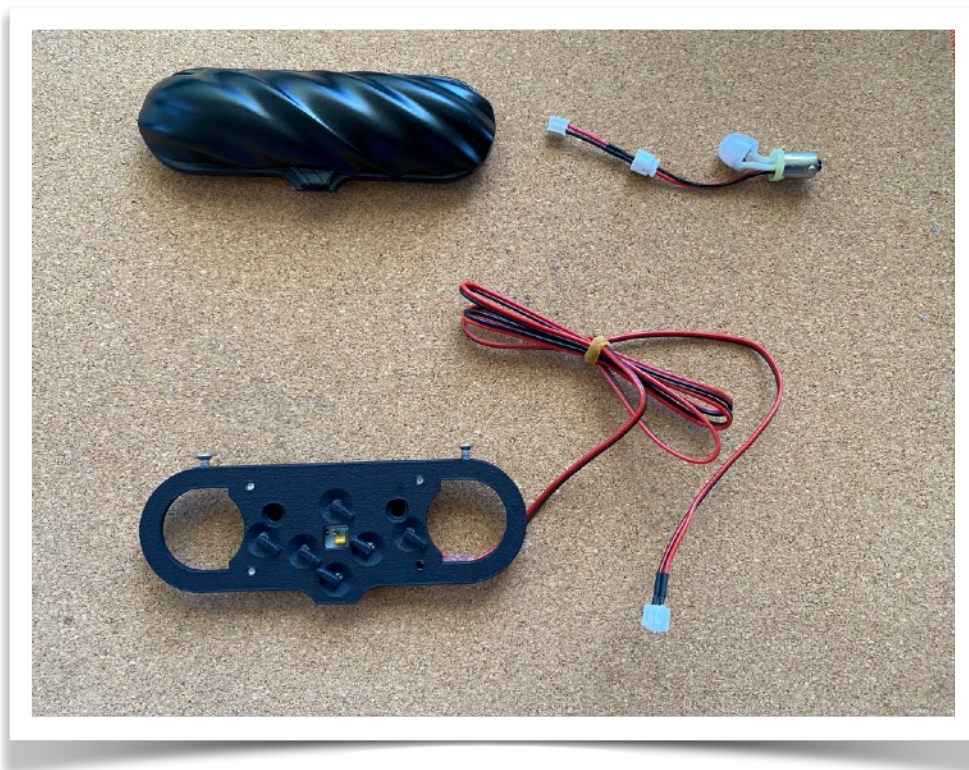


6. - Installing the Sky Mod

Remove the 2 top Philips screws in the sky mod about 3-4 turns and then the cloud resin lens will slide out. Set it aside in a safe place.



Disconnect the bulb and polarity swap lead from the 3 foot Comet Pinball lead.



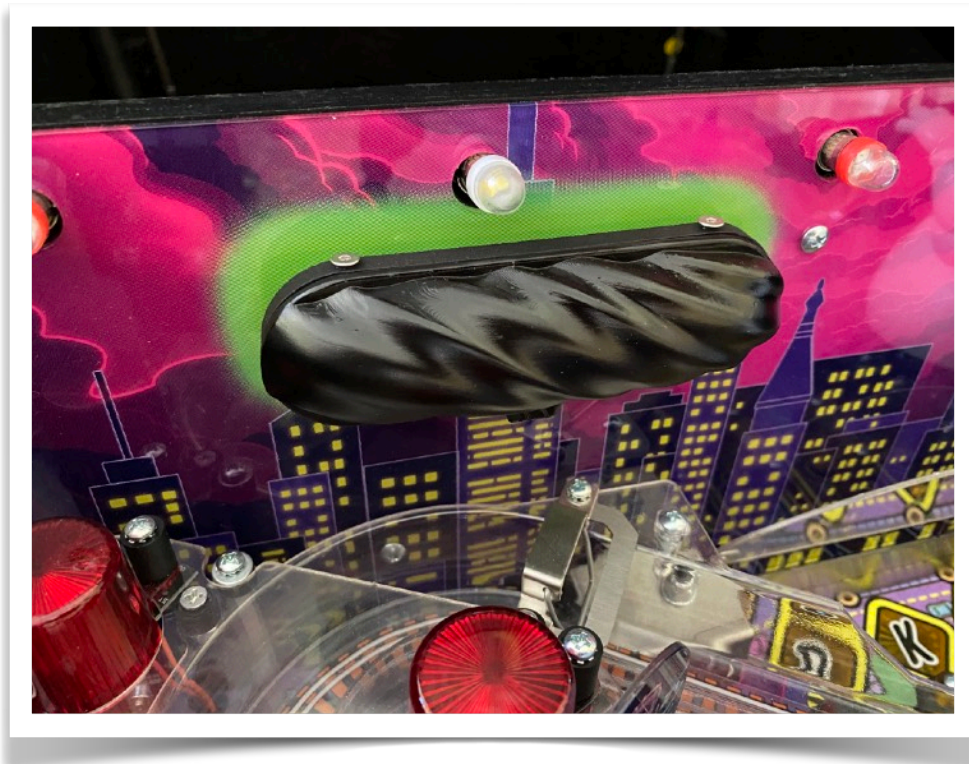
Feed the plug of the 3 foot lead through the right side flasher hole lower edge and push all the way through so it is hanging into the back of the cabinet ready for hooking up to a GI socket.



Install the black sky mod plate to the back board using the same 2 screws that fastened the ghost trap to the backboard. The Pro has alot more room where as on the Premium / LE the sky mod is just a couple of millimetres above the top ramp - but the process is the same.



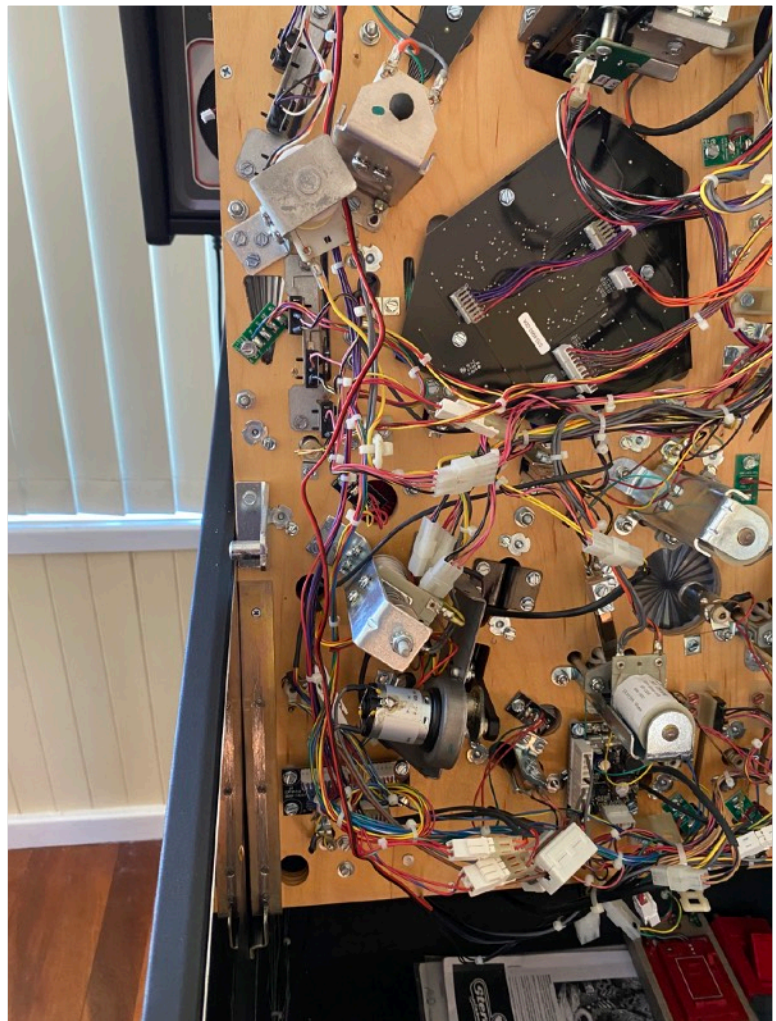
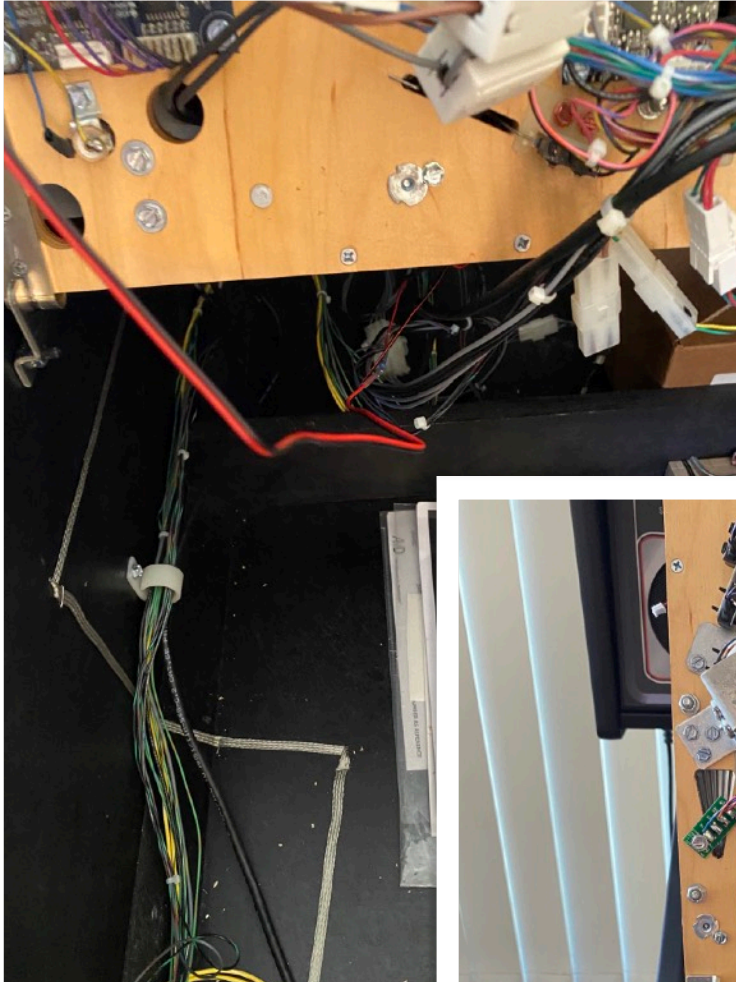
Now simply slide the Sky Cloud onto the backing bracket and insert the screws down into the top of the backing bracket. The screws simply lock into holes on the resin cloud and are not cutting a thread into the cloud reducing the risk of damage / cracking. The thread is pre-cut in the backing mount



7. - Installing the Wiring to GI

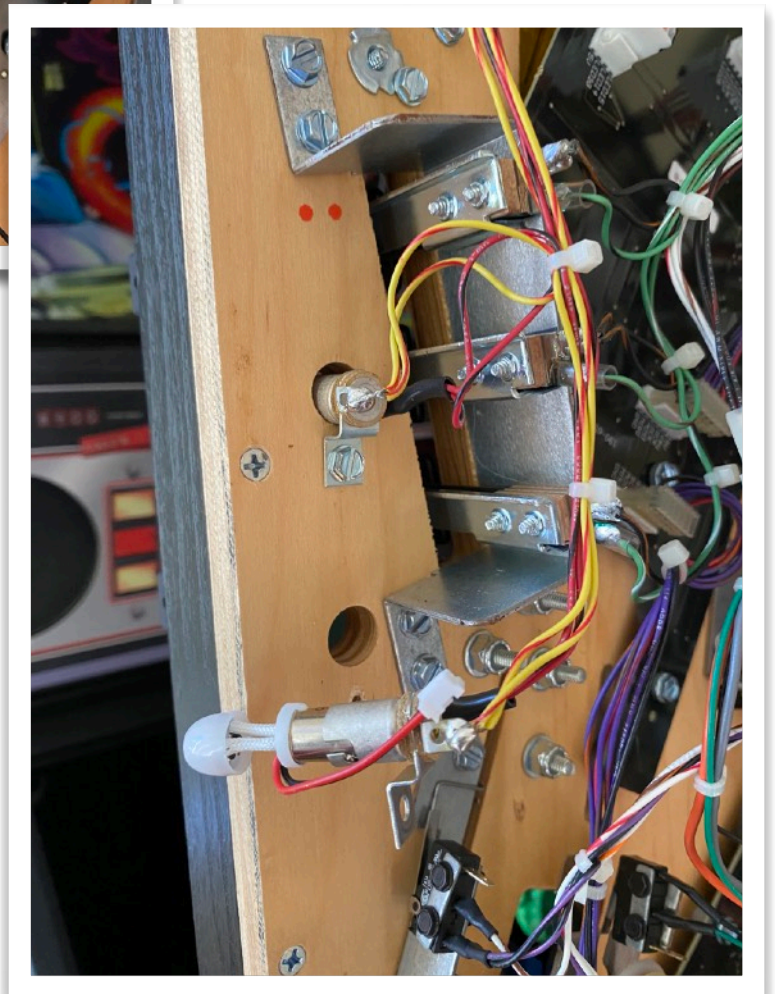
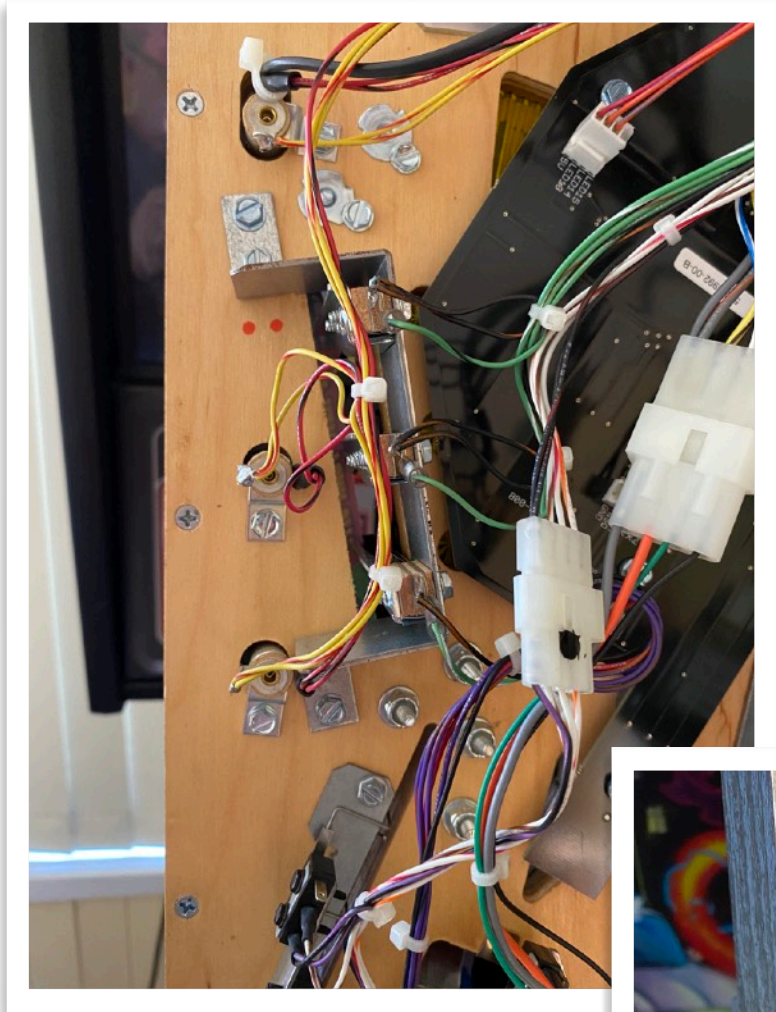
No plastic needs to be removed as the wiring can be connected to a GI socket with the playfield simply lifted up vertically and leaning against the backbox.

You will notice the 3 foot lead hanging at the back of the playfield - now route the lead to the left side towards the library area. You can connect to another location if you wish but this is where I chose to run it.

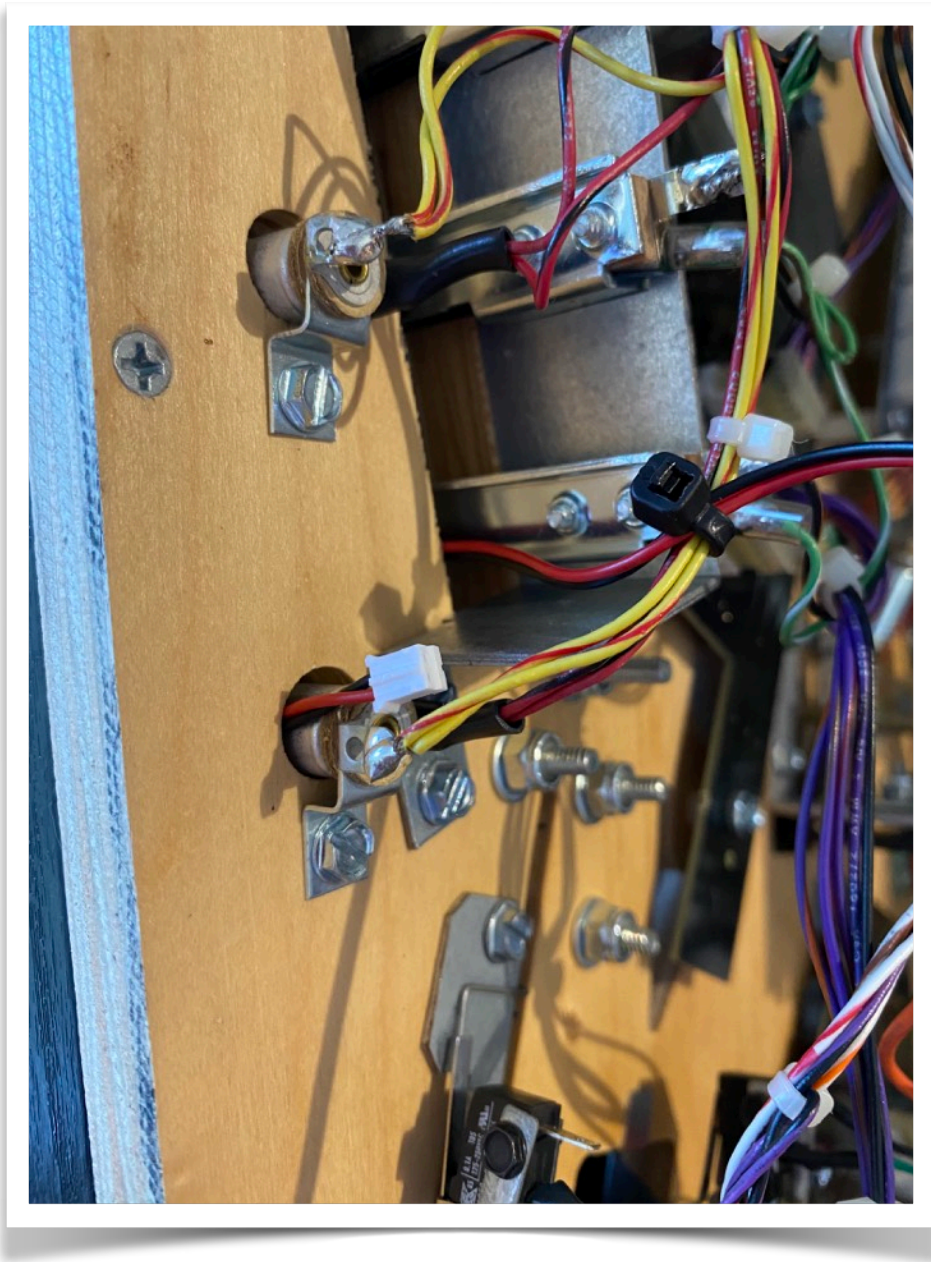


Now route the 3 foot lead up to the library target back as shown.

Now remove the lower bulb socket (when the playfield is lifted vertical - though technically this is a higher socket when the playfield is down). Then remove the existing Stern led bulb and insert the supplied Comet bulb with the adaptor lead bulb socket.



Then re-install the games GI bulb socket back into the playfield but with the adaptor lead sticking out under the playfield.

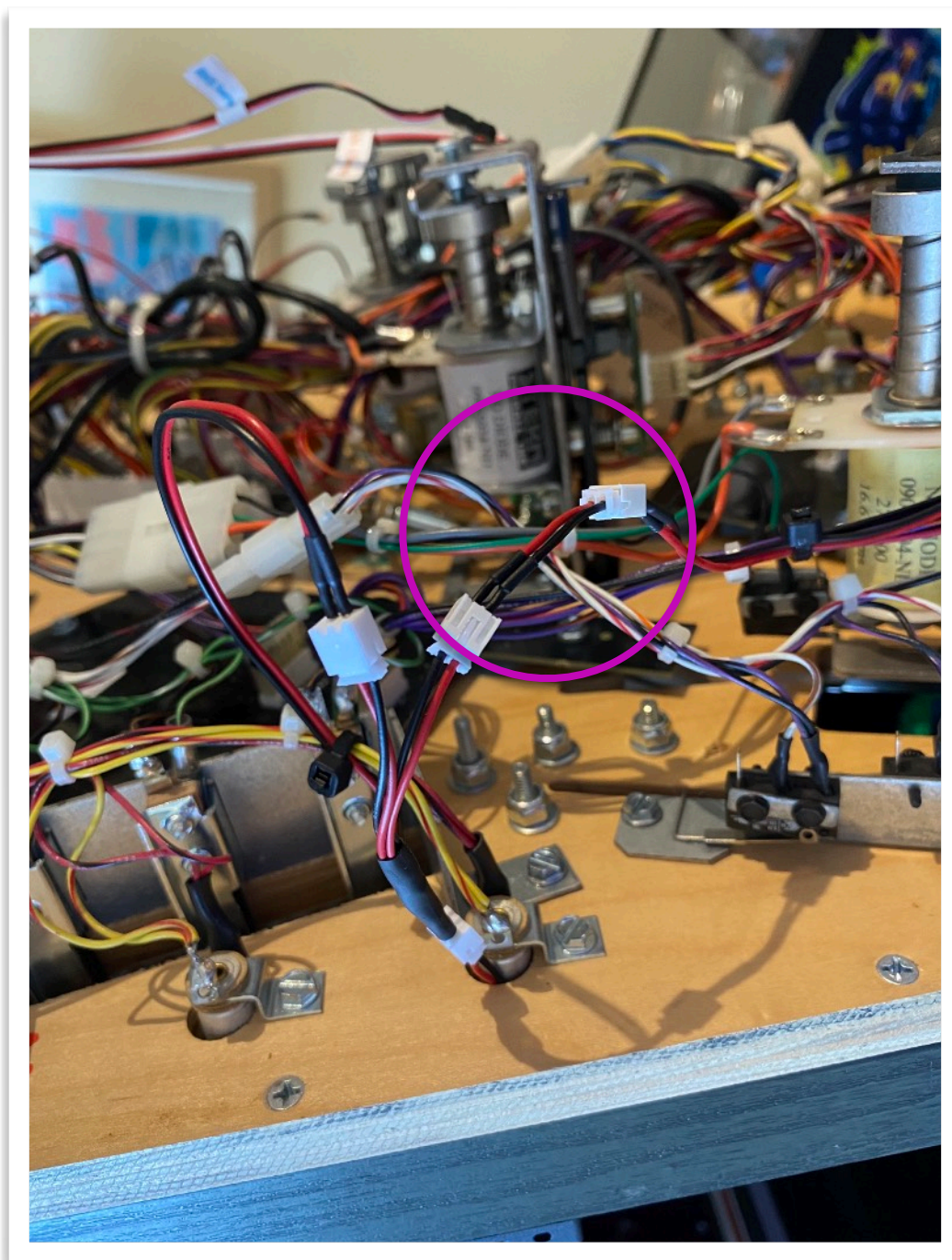


Then connect the 3 foot lead to the bulb adaptor lead and the mod will be ready to test. But in this image you will notice I have an 2 to 1 adapter lead. The second lead will come from the library mod if you are installing this mod so the GI powers both mods. Routing the library cable will be explained in that mod's manual.

Note: you will see a polarity swap lead (purple circle around this part) on the end of the supplied mod lead - leave this connected for the moment.

Now secure the mod's cable to the local wiring so it is restrained and so can't flop around with either a few cable ties, tape or curling the supplied lead around wiring and do this to the back of the playfield.

Now lower the playfield down back to it's service pegs or service brackets.



8 - Testing the Sky Mod

Power up your game and in attract mode the **GI will light up and the Sky Mod should also light up.**

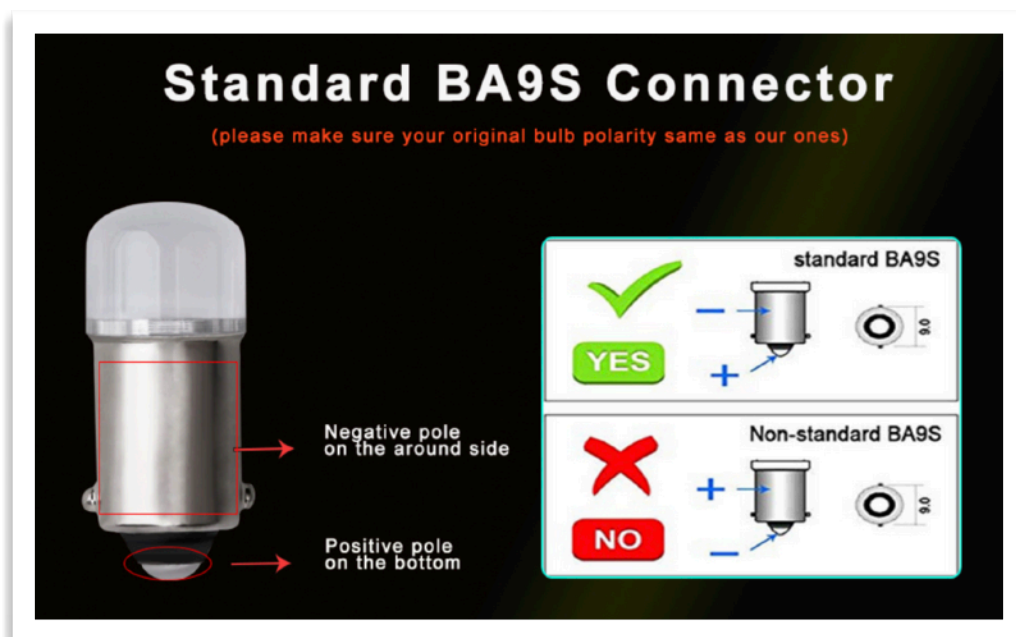
If it works, you are all ok to proceed with installing the mod into your game - proceed to the **Section 9.**

Note - If the mod does not light up when the GI comes on - turn off the game immediately.

The Sky Mod should light up. But if only the connecting bulb lights up and the light source in the Mod doesn't, then the polarity may need to be swapped. The Bulb is universal so it will always light up but the led wire in the Sky Mod is polarity dependent.

If it doesn't work, power off.

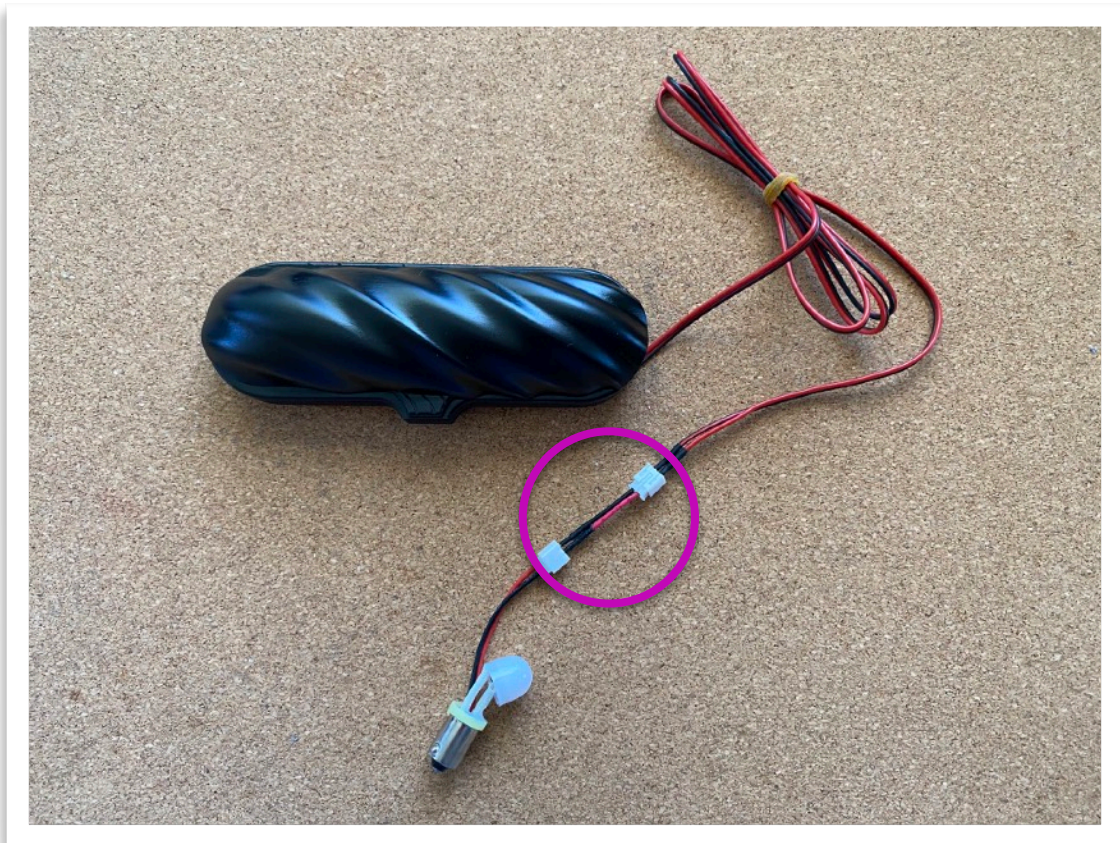
Check all the wire connections, though most probably the polarity needs to be reversed between the socket and the Sign. The Comet Adaptor Bulbs are actually wired incorrect with a reverse polarity hence why Swinks wires the PCB correctly including the cable and then supplies the mod with a polarity swap lead to ensure + & - go to the correct feeds of the PCB from the Bulb Adaptor.



The below picture with a circle around a section of the cable identifies the polarity swap wire. Simply, and carefully disconnect this wire and remove from the mod's wiring lead - being too forceful can remove the cables pins from the connector.

Then proceed to test your Sky Mod once again by plugging the mods lead into the GI socket and lowering the playfield once more and turning the games power back on and everything should now work.

If you had to remove the polarity swap wire - please keep it, as it may come in handy for other games in the future.



9 - Set Up your Game

You are now ready to lower you playfield back into the cabinet and re-install the games balls and power up.

10 - A Few Enhancements

A few customers have made a few suggestions so thought to share with you so you could further modify your game and this mod a little more.

1. One customer removed this LED so then the Mod stood out more as it does throw a glare spot on it.



2. Change the 2 x Stern White Flashers to 2 x Green Flashers similar to these - make sure to get 5vdc spike suited flashers as 12-13vdc ones will not be that bright:

https://www.cometpinball.com/products/8smd-spike-5v-flashers?_pos=16&_sid=2f766bfbd&_ss=r&variant=30316619890790



11 - Enjoy

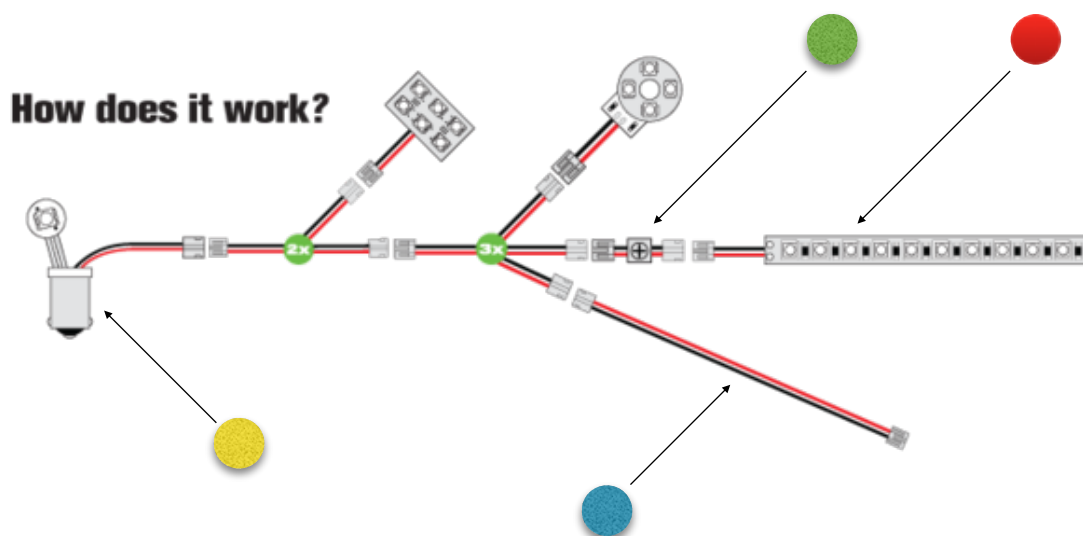
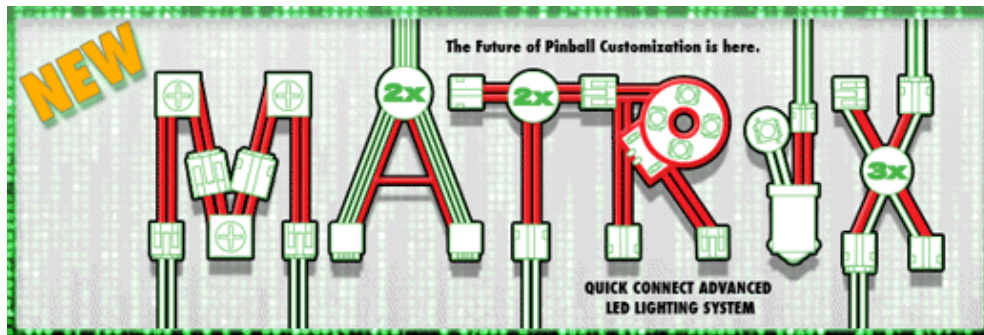
Now your mod is installed and operational, it will operate when ever the games GI is active. In some modes the mod will not flash as it is wired for a DC setup but has a small capacitor to still maintain the breathing LED's. Do not panic as this adds variety to the mod and the breathing LEDs are always changing and phasing out of sync which is intended. You will notice on immediate power up all the LEDs will most likely all light up and then it will start to go out of sync.

Enjoy.



12 - Spare Lighting Parts

- Lighting is supplied by Comet Pinball based in Colorado in the USA using their cool products from their Matrix range. See a coloured arrows referencing the components.




To find these parts:

 <https://www.cometpinball.com/products/quick-connects?variant=12387006677036>

 <https://www.cometpinball.com/products/matrix-spike-conversion-wire?variant=27680693682278>

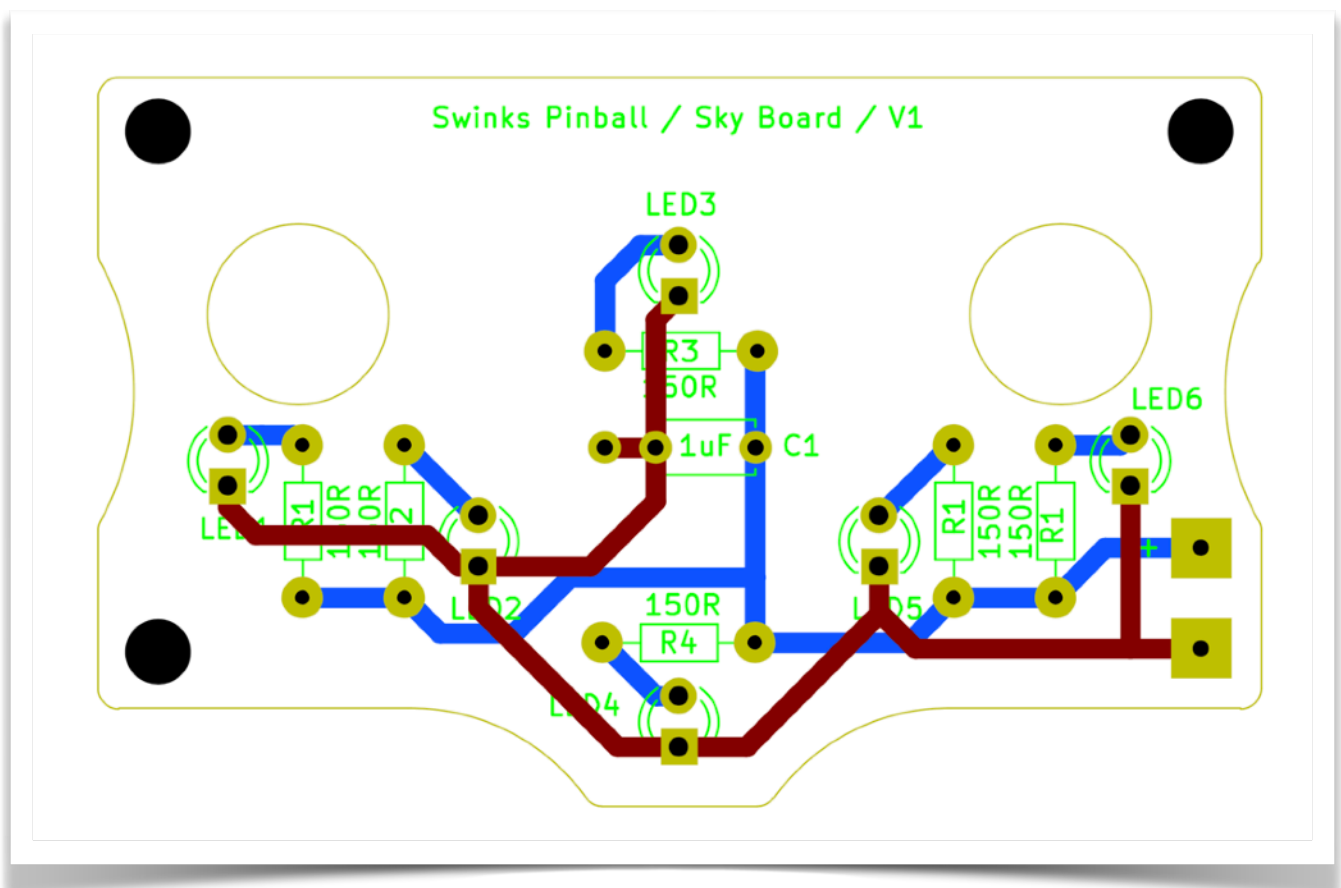
 <https://www.cometpinball.com/products/matrix-extension-wires?variant=12493662158892>

 Comet LED strips are not used in this mod rather 6 x 3mm Breathing Green LEDs fitted to a custom PCB designed so you can maintain for many years as uses all through hole components readily available.

13. Resource - Assembly Drawing and LED Filament Notes

The following drawing is of the custom PCB so you can identify the components and their placement.

- The positive side of the LED is always to the top hole (blue line on the below schematic).
- The LEDs (6 off) are 3mm breathing green LEDs (3.2v)
- The Resistors (6 off) are 150 R
- The Capacitor (1 off) is a 1uF but a larger capacitor can be swapped out hence the second wider spaced hole.
- The 36" lead from Comet Pinball has a connector removed and re-soldered to the PCB for the power input,



RETURN POLICY:

*Please contact us as we will be proactive to try and quickly resolve any problems from abroad reducing the need to send your purchased parts back for repair. Approval from Swinks Pinball must be received before any items can be returned for repair or replacement. All parts, cables, etc. must be included when the product is returned. We will repair or replace/exchange components based on our analysis of the problem. Swinks Pinball reserves the right to deny any return or exchange. Refunds are not given. Freight will be covered by Swinks Pinball on the return trip back to you **only**.*

In stating that we want everyone to love and enjoy their Sky Mod - so if you have any issues at all please, please reach out via the well known Pinside forum or another forum or via email and we will promptly help you out.

Email: swinks.pinball@gmail.com

PRODUCT DISCLAIMER:

Please remember that this is a "MOD." We took great effort in designing and testing our product in order to produce a high quality product, but it is not a Stern factory original nor an approved part for your pinball machine. There is the risk of unwanted side effects with any modification to a factory game and there are many factors that can cause undesirable side effects after installation of such a modification. As such, we cannot assume responsibility for game malfunction, damage to the game or surroundings, unwanted electrical emissions, personal injury, or other adverse effects caused by the installation of our MOD.

PRODUCT QUALITY DISCLAIMER:

All parts are made to the highest quality possible. The Mod's parts are professionally 3D printed by Zelta3D using MJF & SLS nylon & Resin processes which may have some minor print lines, or clouding (on the resin parts) - which are all part of the process and treated to the best of our ability to make the parts look nice and professional. In addition the Jet Black painting is intentionally not solid in colour so the green light can pass through. Once the mod is installed into the game with game lighting these minor effects will not be clearly visible from the players perspective and the mod will give your machine that cool night time storm feeling.