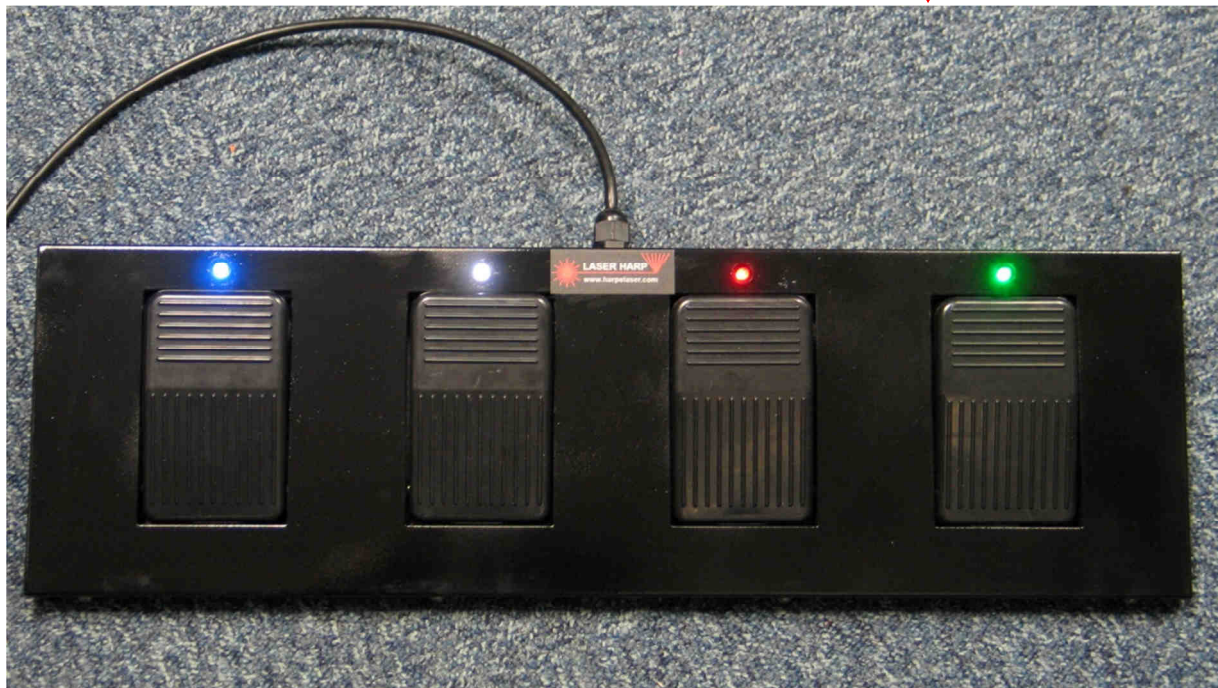


# GENESIS LASER HARP CONTROLLER (LHC 1) FOOTSWITCH ASSEMBLING GUIDE



Hardware: MORISSEAU Franck (Genesis)  
Firmware: BERTH Laurent  
Software: MAILLET Laurent  
<http://www.harpelaser.com>  
[contact@harpelaser.com](mailto:contact@harpelaser.com)

**Features:**

- **4 assignable pedals**
- **The pedal positions are visible by night thanks to LEDs. Can test the switch too.**
- **Solid (built with steel)**
- **Affordable**

## **SUMMARY**

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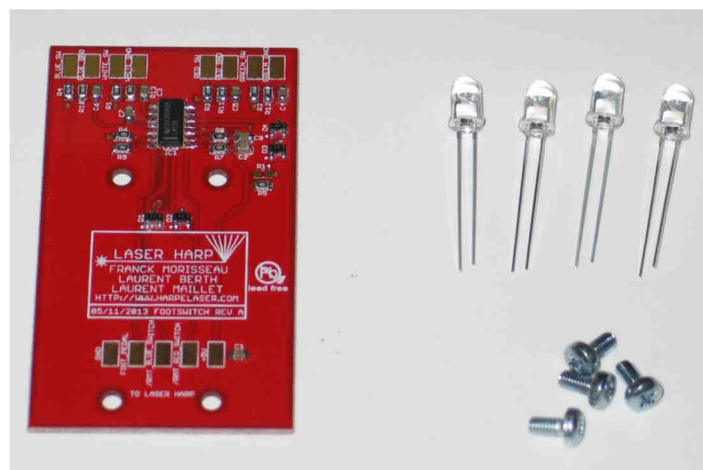
## REQUIRED PARTS



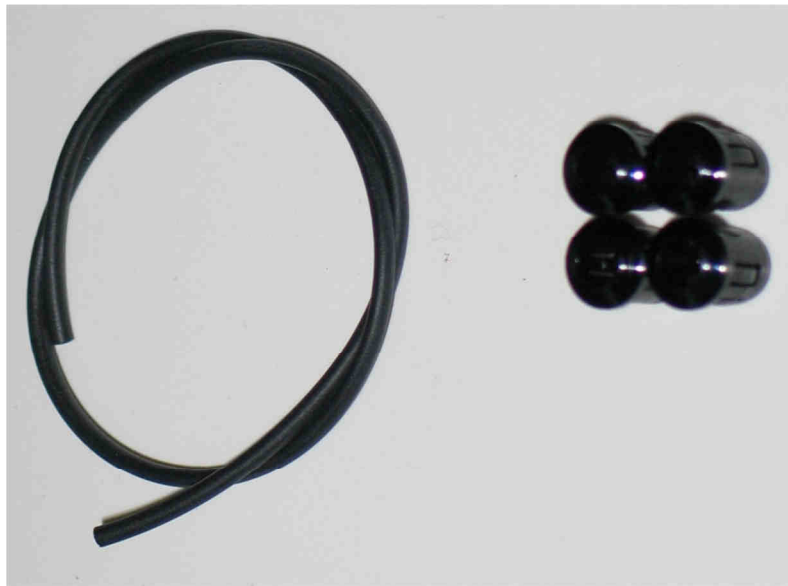
Two meters or more (but less than 5 meters) of 6 conductors cable without shield (like Radiospares P/N : 660-4049) and one 6 contacts DIN MAS60 connector.



One footswitch adaptor PCB from us or built by your own with the gerbers files from the website, 4 x 5mm high brightness LED with wide angle (100° for example) one blue, one white, one red and one « true green », 4 x M3 by 6mm screws.



A piece of 3mm heat shrink tube, 4x LED holder with 8mm external diameter.



Some UL1007 wire with different color. But you can strip a piece of the 6-conductors cable.





You will also need:

- a stripper
- a rule with pen
- a soldering iron with solder
- some cable ties
- a hot glue gun
- a drill with a 8mm drill
- black paint for metal.

And yes ! a footswitch !.

### **WHERE TO FIND IT ?**

After much internet research and testing, we found two similar models affordable and readily available.

The first one is the Showtec « 30266 / 30267 » and the second is the Eurolite « KLS RGB footswitch ».

They are available on the internet for 40/50 euros. The Eurolite can be found on the Thomann website.

Even if they seems to be identical a slight difference exist. We prefer the Showtec one because it uses four threaded inserts to hold the PCB in place. We have built the adapter PCB for this mount.

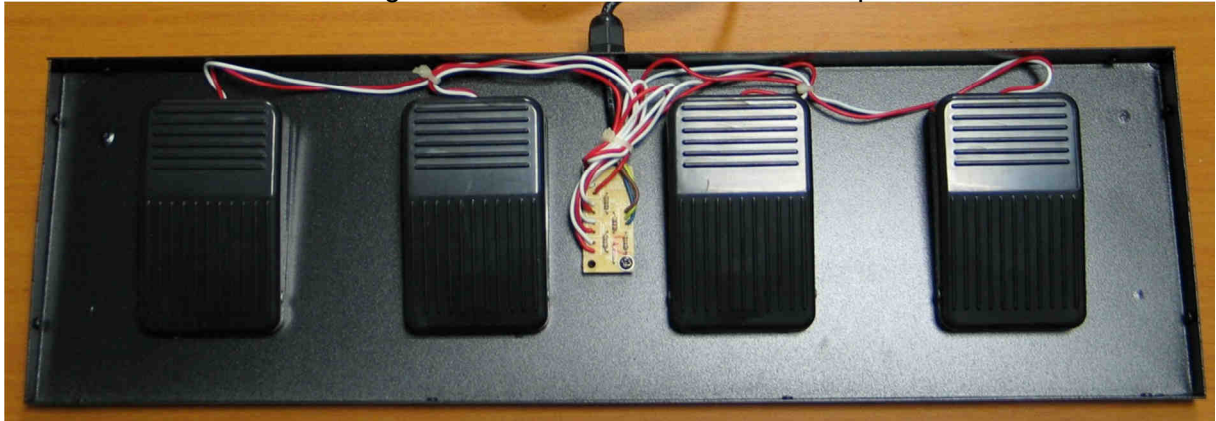
The next steps are the same wherever the model you have.

### **THE PAINT!**

After purchase this is what you should get:



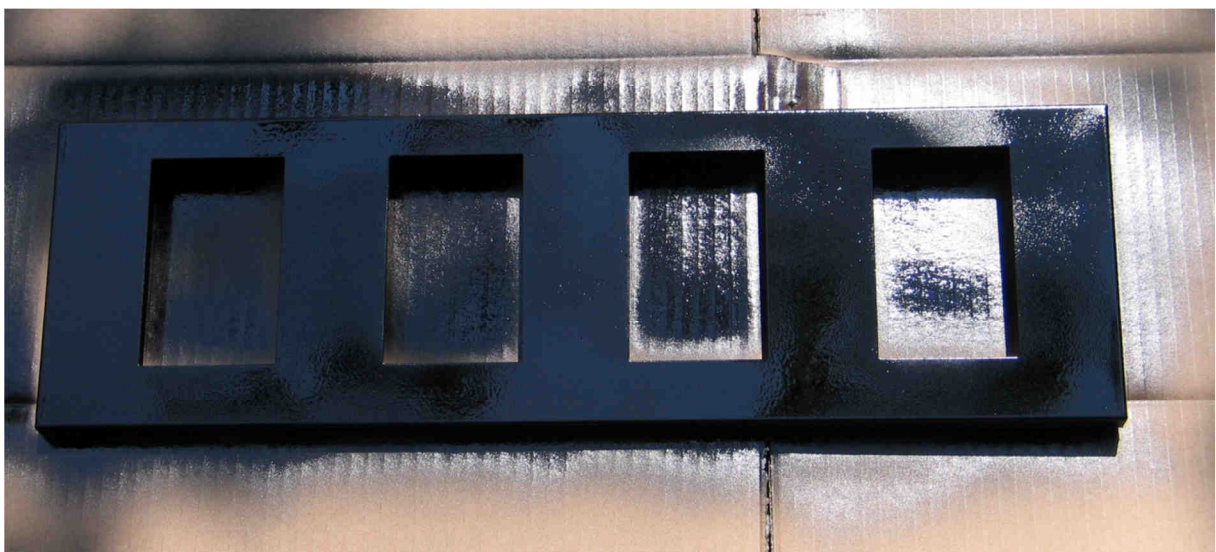
Of course you can skip this step but the black paint is still more visually attractive. You can start by drilling the LED holes before painting if you want. Remove the screws on the edge of the footswitch to remove the top bezel.



Put the top shell outdoor on a cardboard...



Apply two or three black paint layers on it. Let dry between each layer.

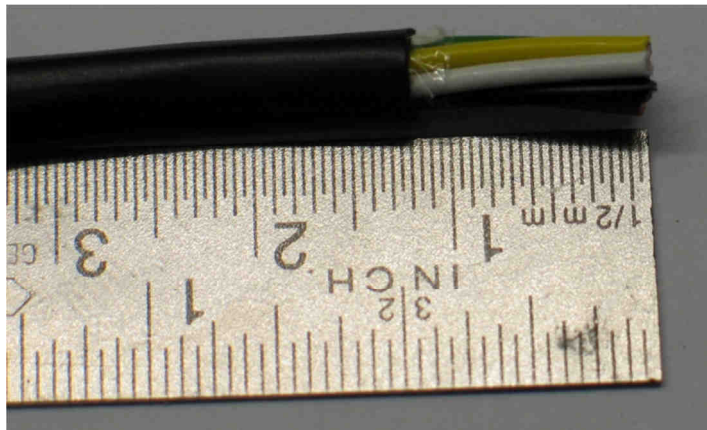




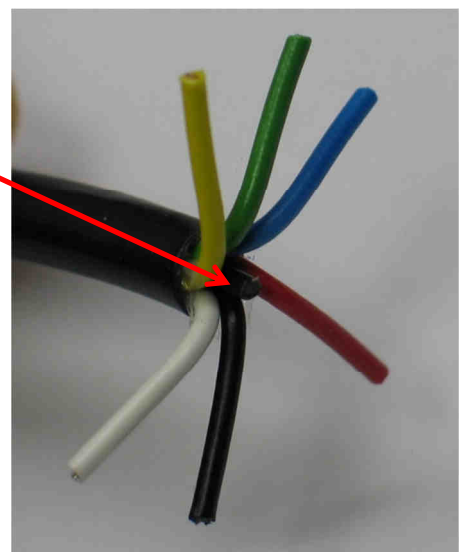
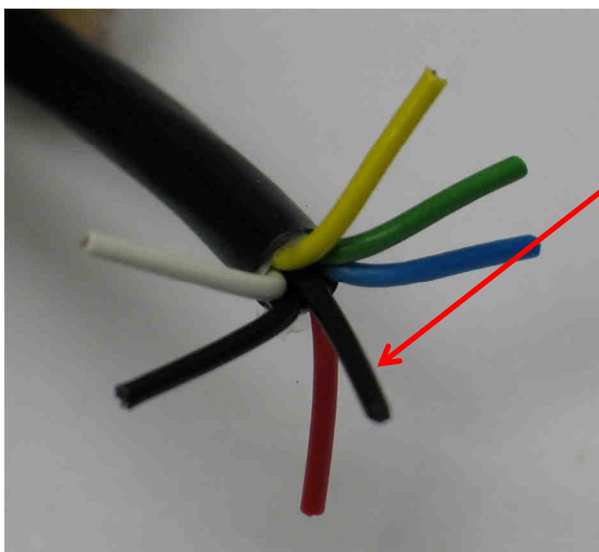
Let the paint dry for at least one hour. We can continue during this time.

### **THE CABLE**

Take one end of the 2-5 meters long 6-conductors cable and strip it over 12 mm.

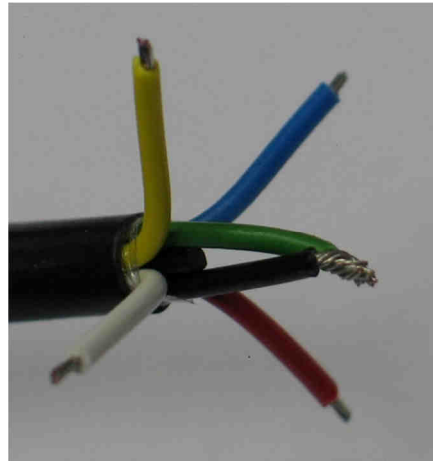
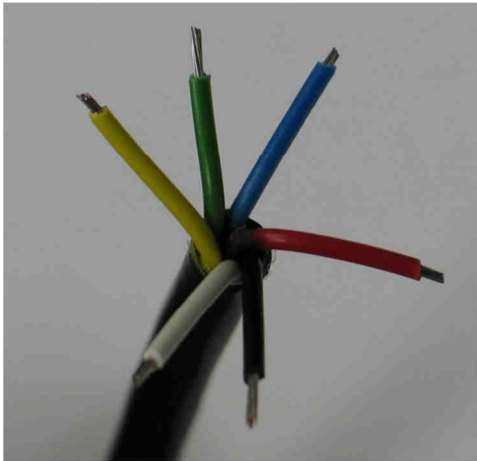


Separate the wires and cut the plastic guide.

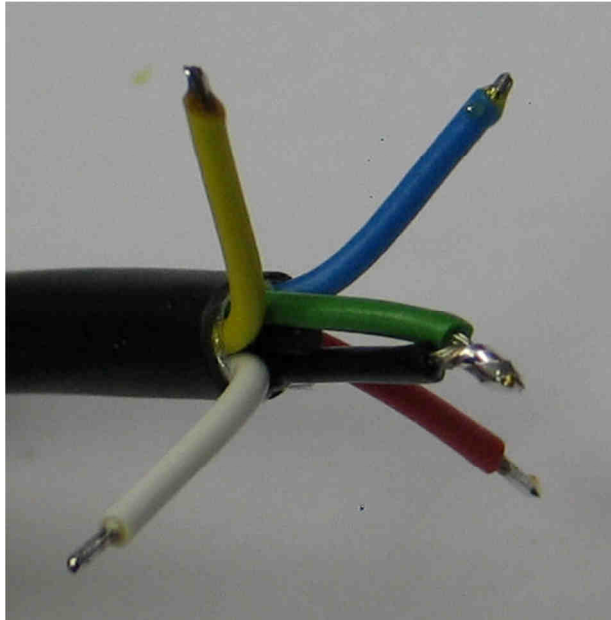




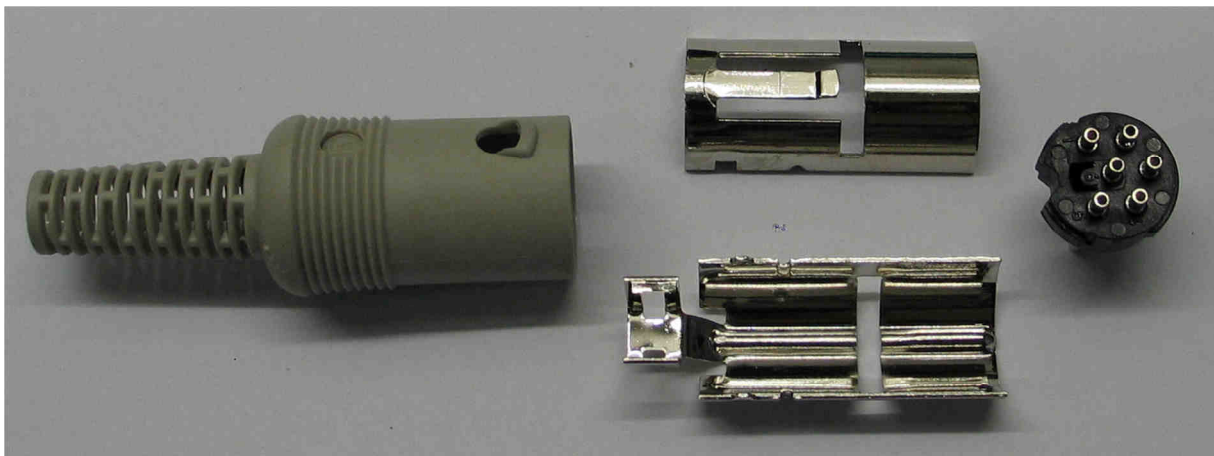
Strip the wires over 2mm and 4mm for the green and black ones. Twist them together.



Use a soldering iron to tin the stripped wire ends.



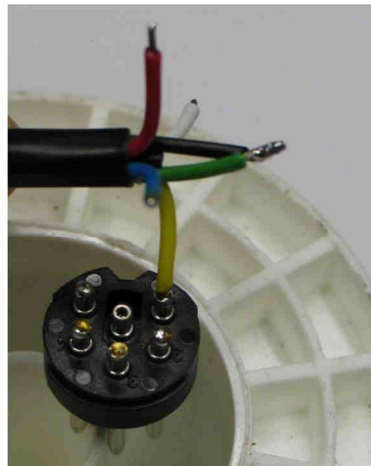
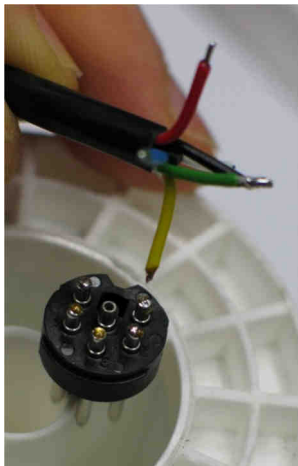
Disassemble the MAS60 DIN 6 connector by pushing the locking tip.



Find something to hold the contacts in place during the wires soldering.  
The solder spool can do the job.  
Put some solder in the contacts 1 to 5 barrels.



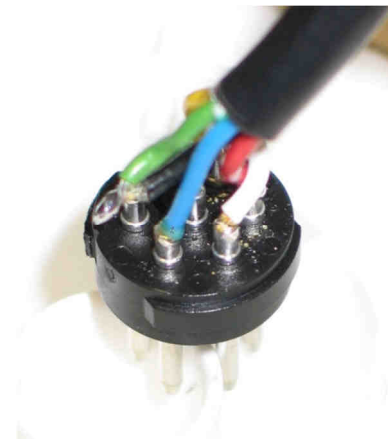
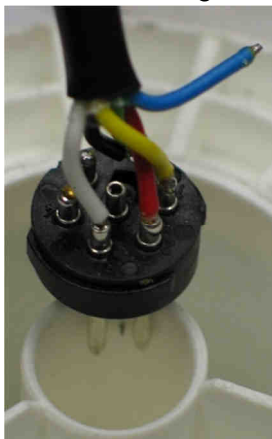
Take the multiconductor cable and approach the yellow wire from the barrel « 1 ». Make a quick solder of the wire in the barrel to avoid thermal stress on the plastic.



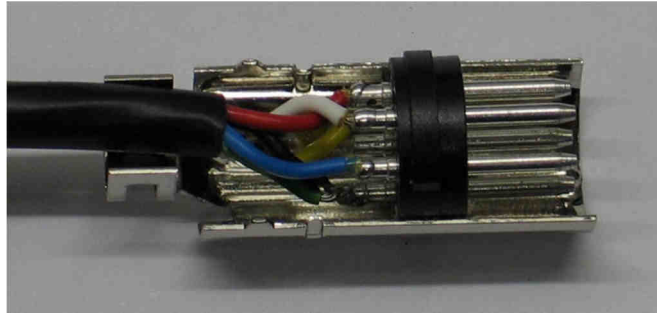
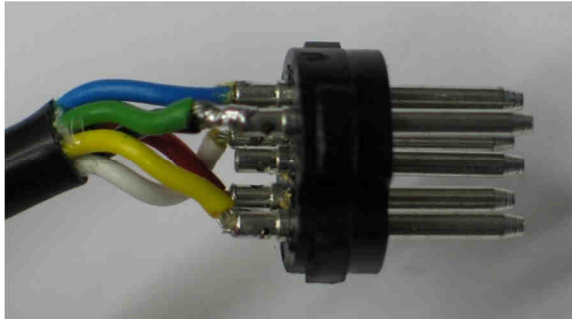
Do the same for the red wire and the barrel « 2 »



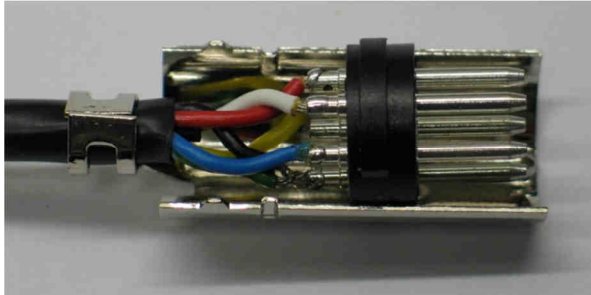
Now for the barrel « 3 » and the white wire, the barrel « 4 » and the blue wire and at last with the barrel « 5 » and the green+black wires.



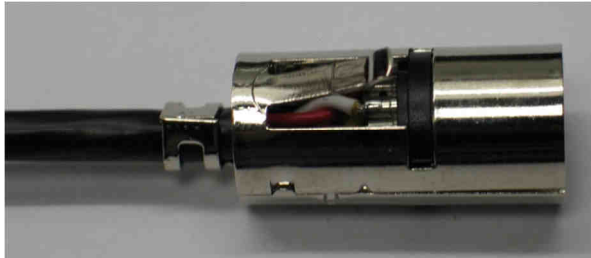
The contact assembly is now ready to be put in the shells.



Tighten the flange around the cable.



Put the top shell and pull a little bit the locking pin.



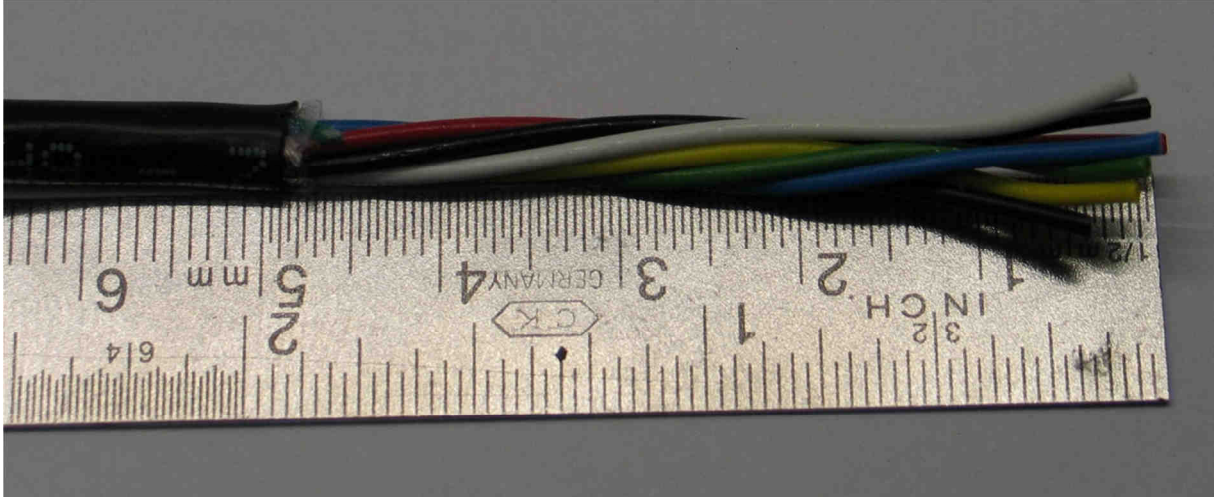
Pass the cable end through the plastic cover of the connector.



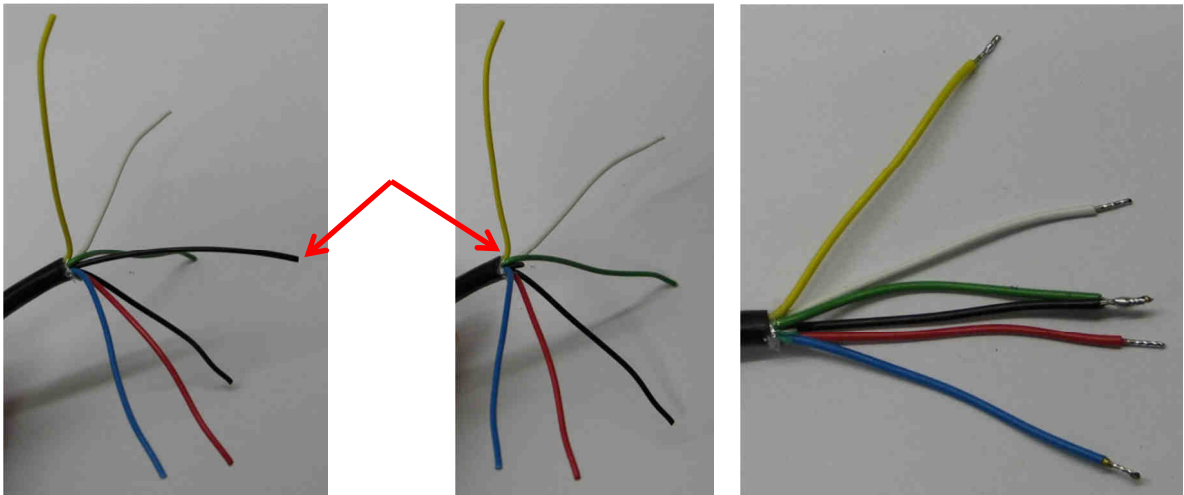
Reach the other end and assemble firmly the connector. The pin will lock.



Take the other end of the multiconductor cable and strip it over 50mm.



Cut the plastic drain, strip the wires over 4mm and twist the black and green together. Tin the stripped wire end with soldering iron.



This cable is now ready.

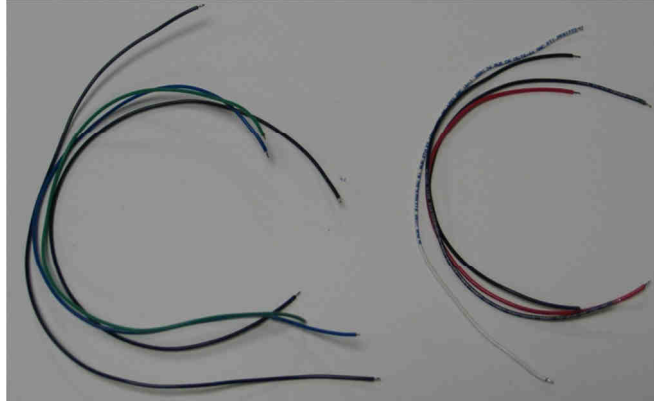


## **WIRING THE LED**

Prepare with the UL1007 wire spools:

- Two 20cm and two 30cm black wire bits.
- One red and one white with 20cm length.
- One blue and one green with 30cm length.

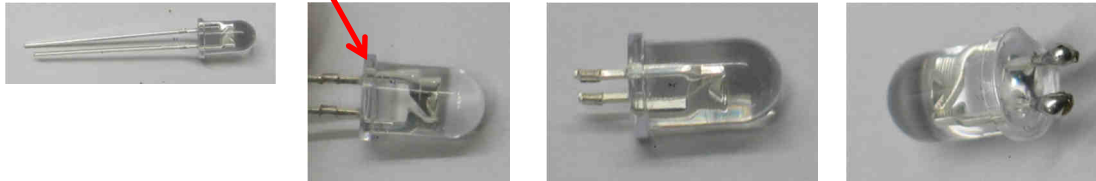
Strip and tin over 2mm each end of the wires.



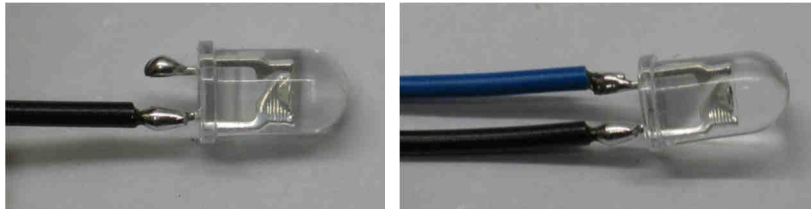
Prepare the LED by colors. With a tester if required.

Take the blue one and find the cathode (-) indicated by a flat spot on the case.

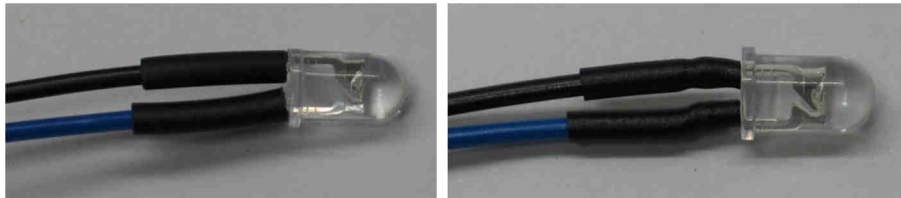
Cut the leads and add some solder on them.



Take one of the 30cm black wire and solder it to the cathode of the blue led. Solder the blue wire to the other lead (the anode).



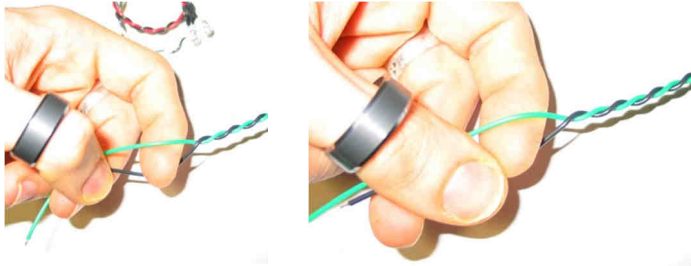
Add two 10mm length shrink tube bits to insulate the connections.



And twist the wires together to get a better finish.



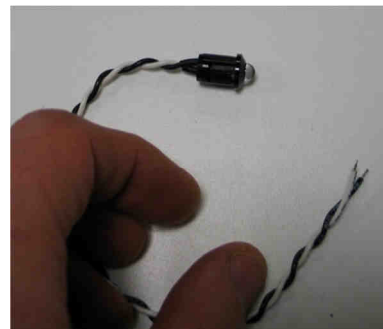
To twist the cables, take the wires between the thumb and forefinger and turn the led several times when pulling slightly.



Do the same thing for the green led and the 30cm length black and green wires. Then do the same with the red and white diodes and 20cm length cables. At the end you get 4 assemblies.



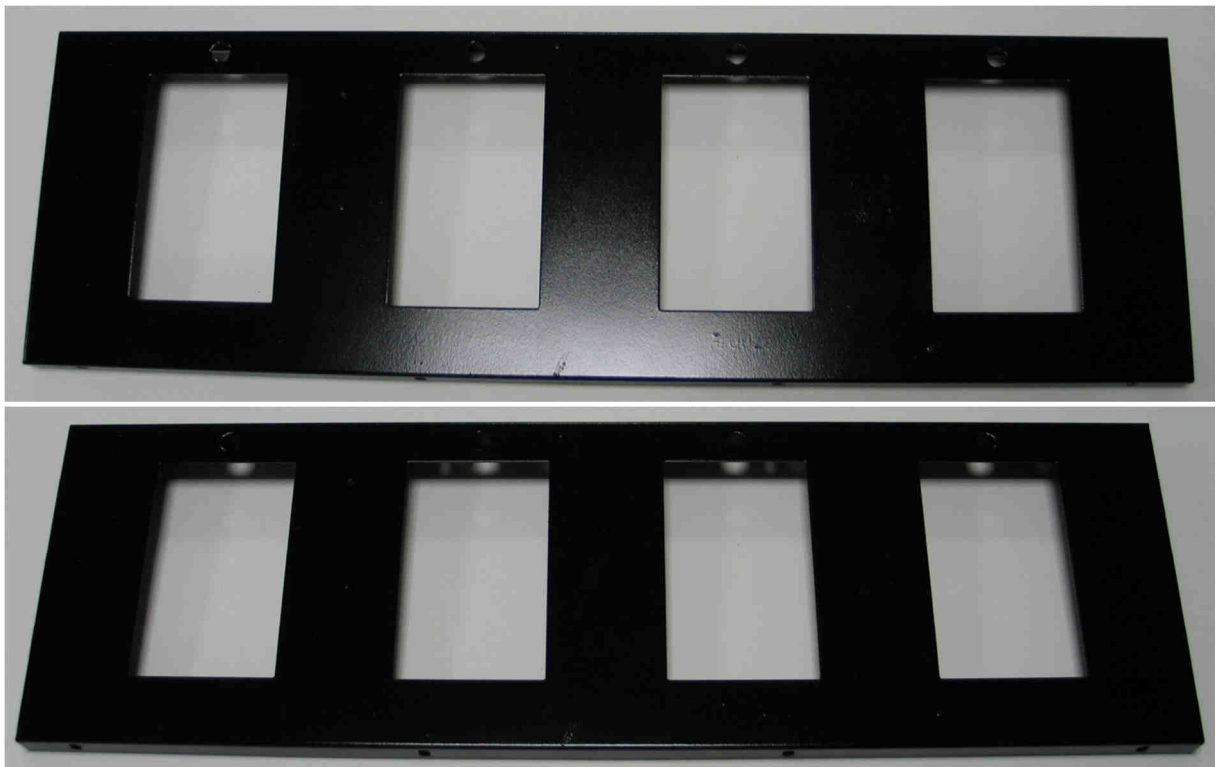
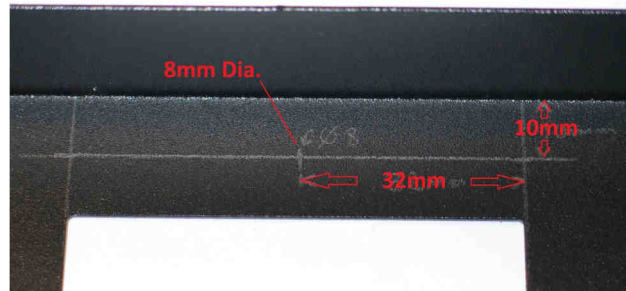
Insert the diodes in the plastic holders.



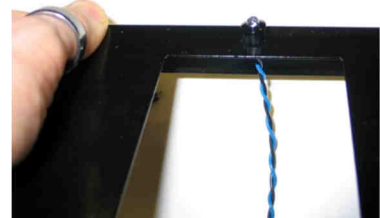
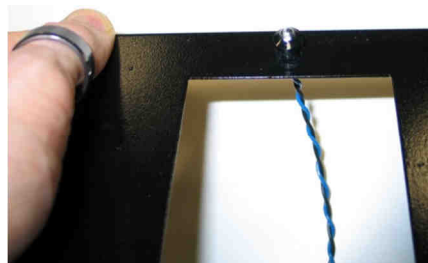
They are now ready for the next step.

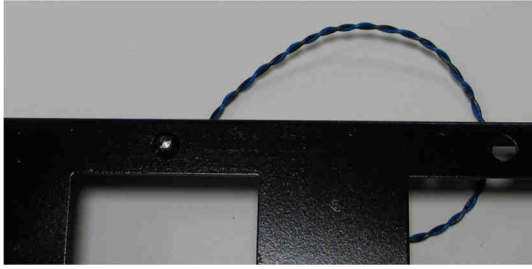
## **DRILLING / GLUING**

When the front panel is dry, make the 4 holes mark at 10mm of the top edge and at the middle of each pedal. Plug the hot glue gun.  
Drill a hole with a sharp 8mm drill at each mark.

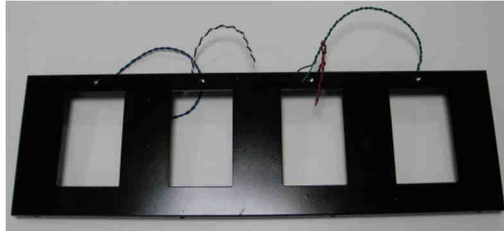
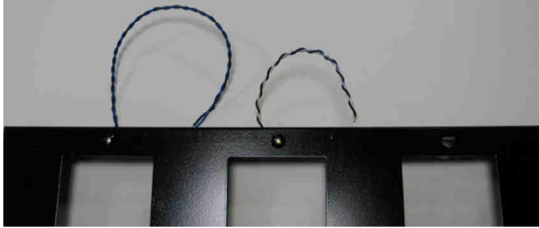


Insert the blue led cable in the first hole and push on the plastic holder.

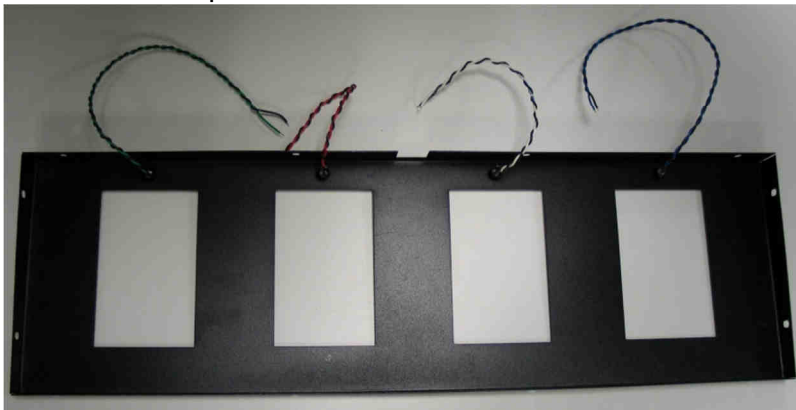




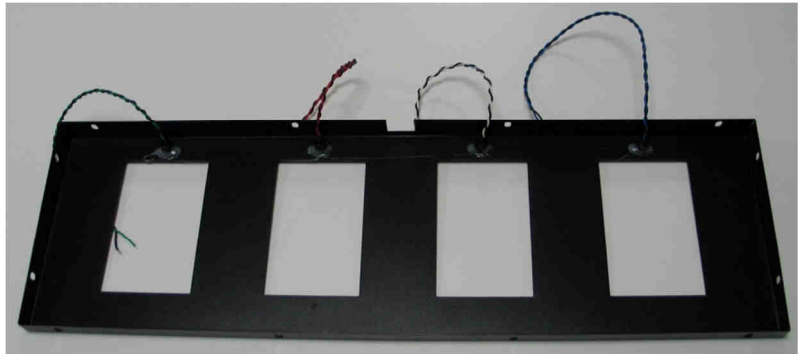
Do the same thing with the white, red and green leds in order.



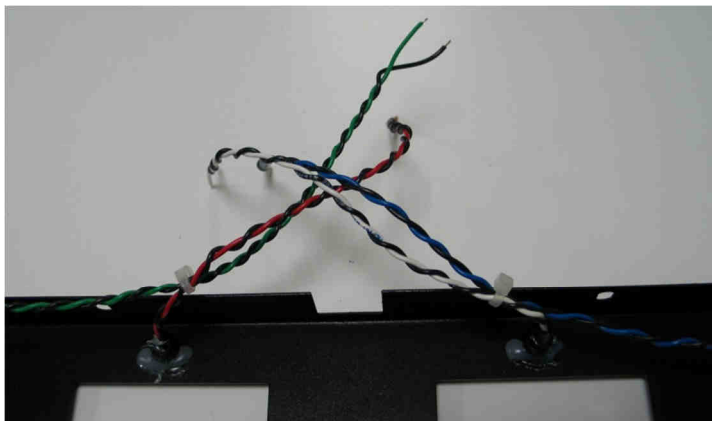
Turn the cover upside to see the cables end.



Glue the led holder in place with the glue gun.



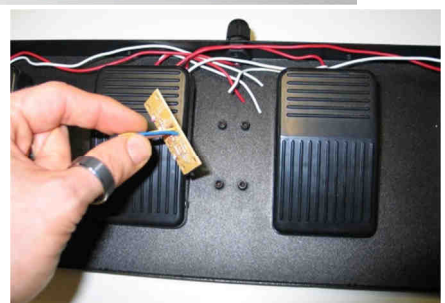
Use two cable ties to hold the wires together





## THE MODIFICATION / ASSEMBLING

Get back the bottom of the footswitch, remove the old cable and cut the pedal wires from the PCB. Remove the little PCB if needed (Showtec model)



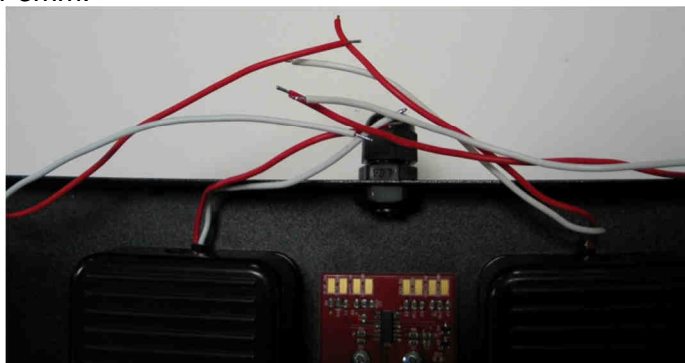
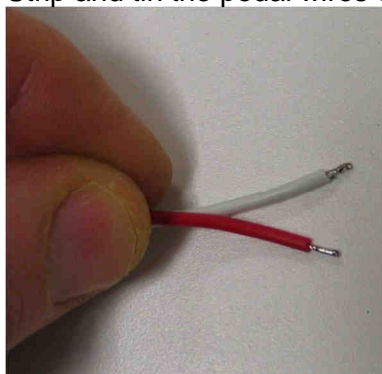
Install the little adapter PCB with four M3 screws or glue it if you have the Eurolite model.



When the PCB is installed, place the top shell beside the bottom one.



Strip and tin the pedal wires over 3mm.

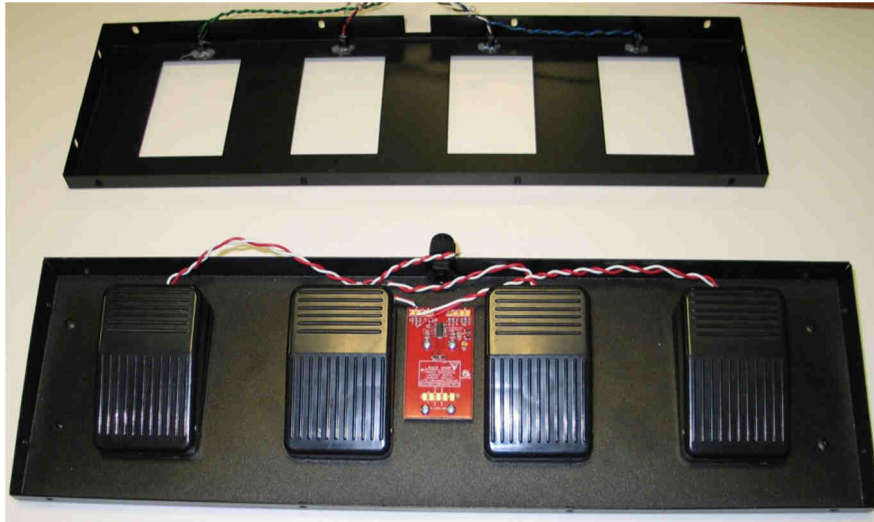


You can twist them like the leds.

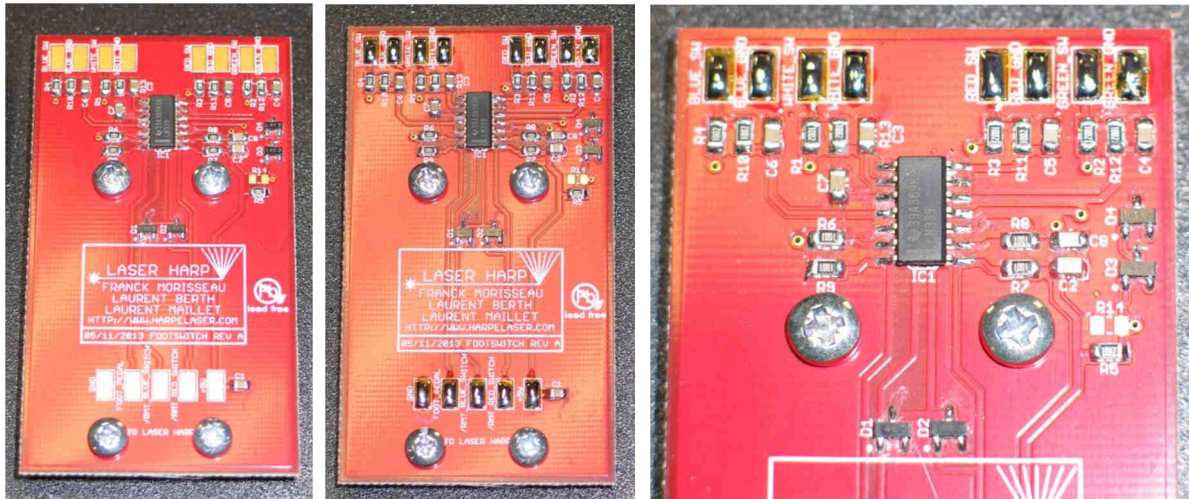


Overview at this step.

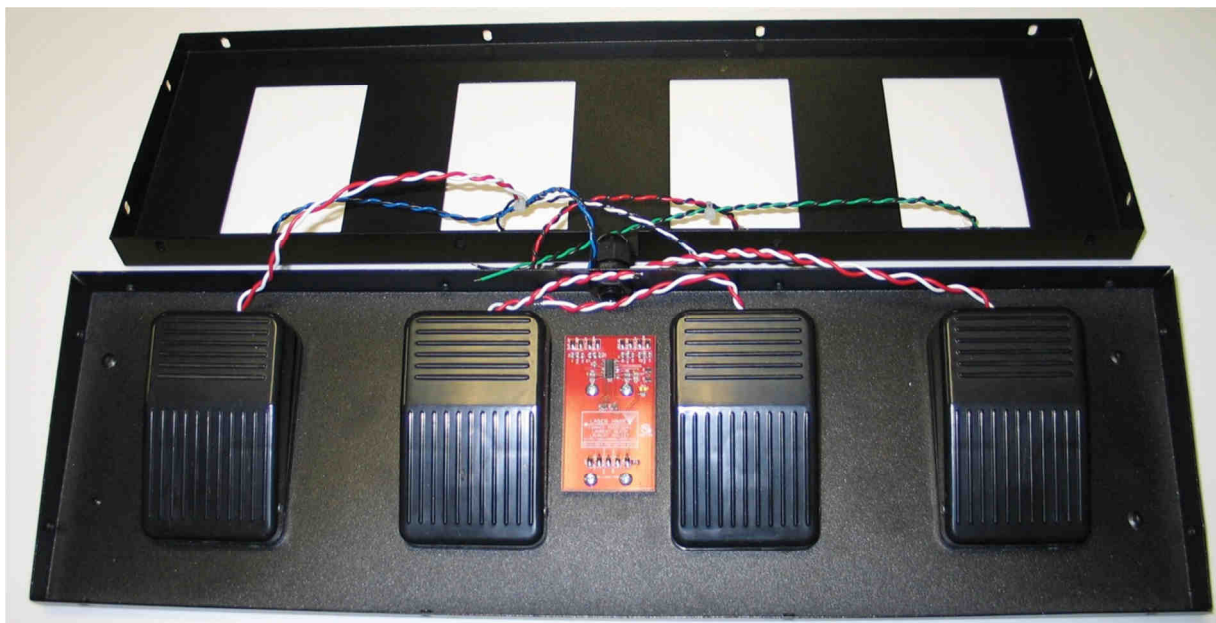




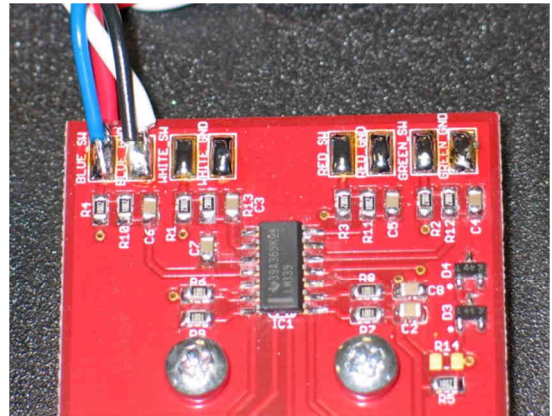
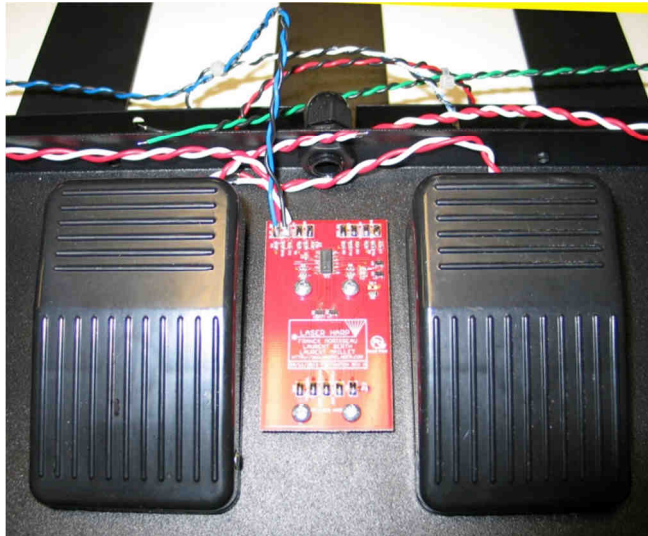
Take the soldering iron and add solder on the PCB pads.



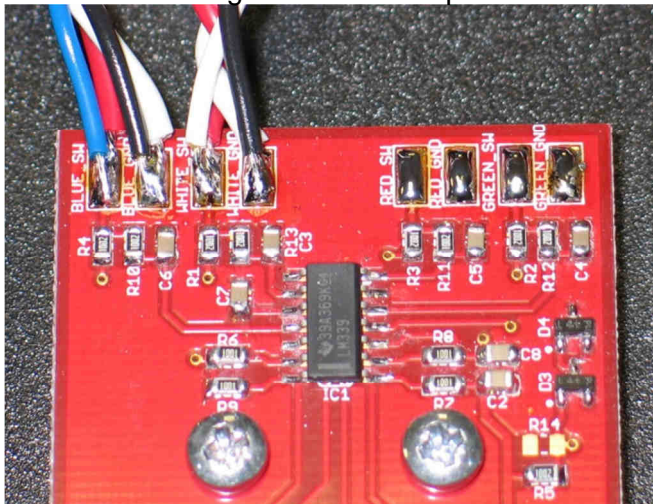
Place the two shells side by side to help for the next step.



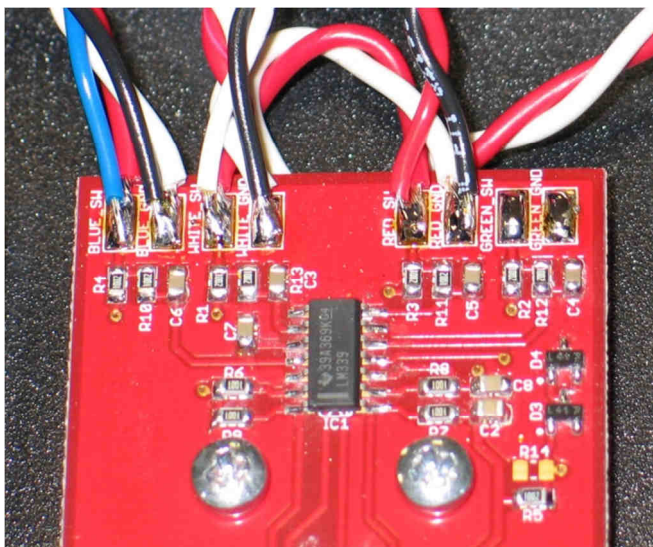
Now solder the red wire of the left pedal with the blue led wire on the « BLUE SWITCH » pad and the white wire of the pedal with the black wire on the « BLUE GND » pad.



Do the same thing for the second pedal and the white led wires.

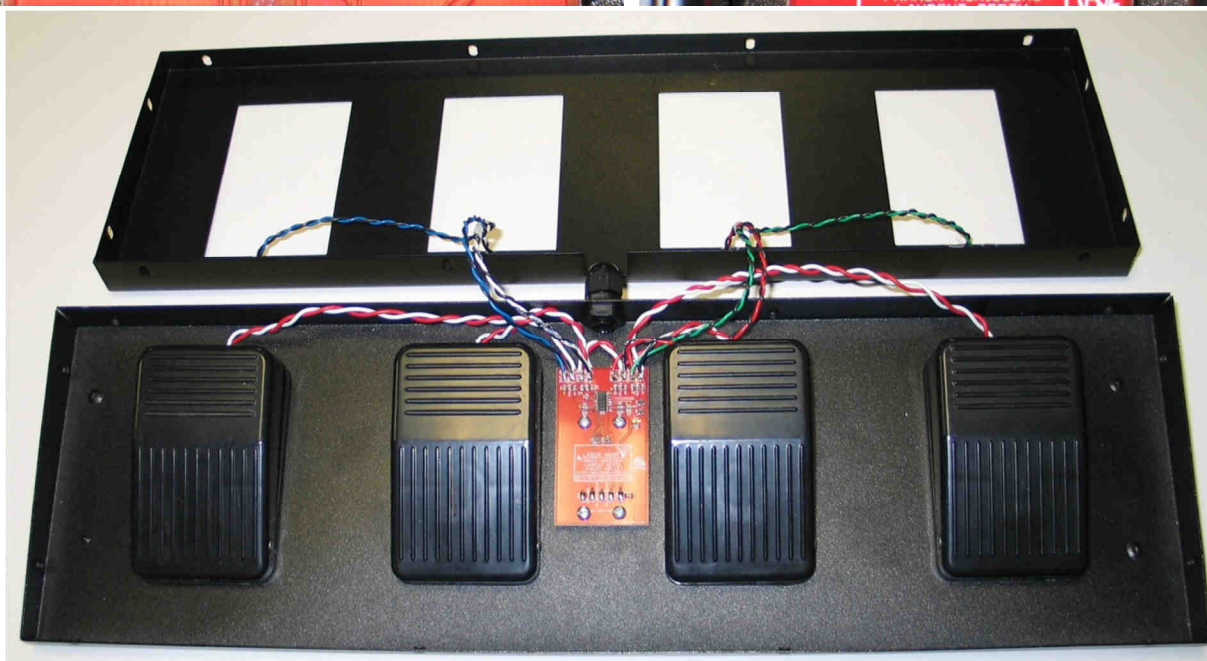
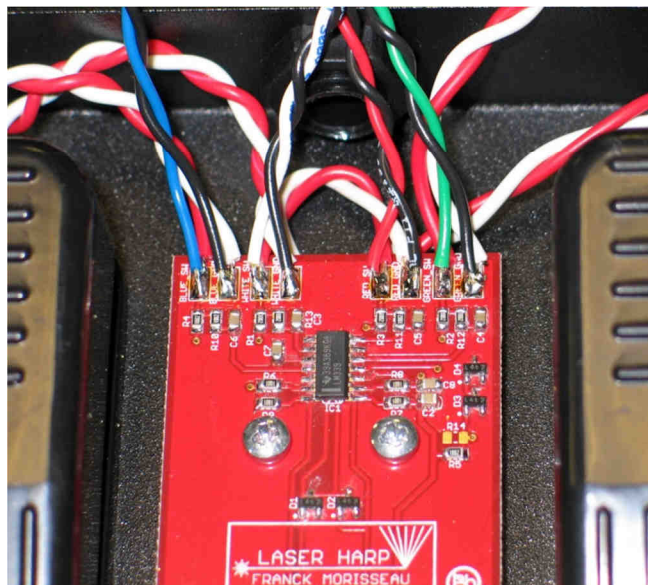
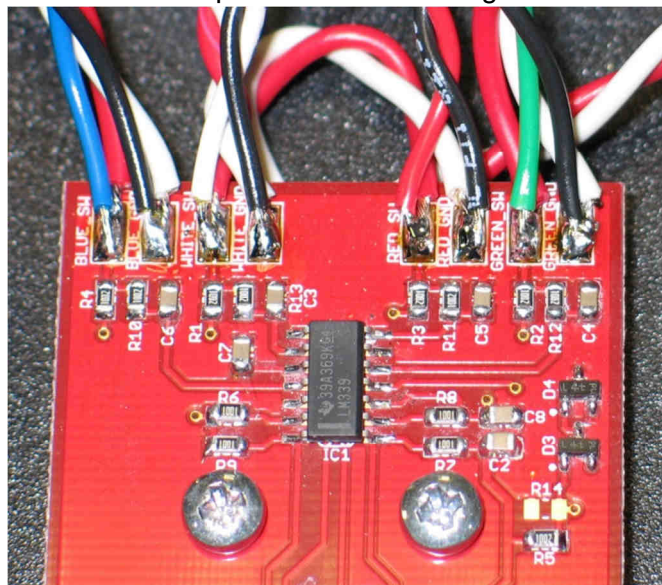


And with the third pedal with the red led wires.

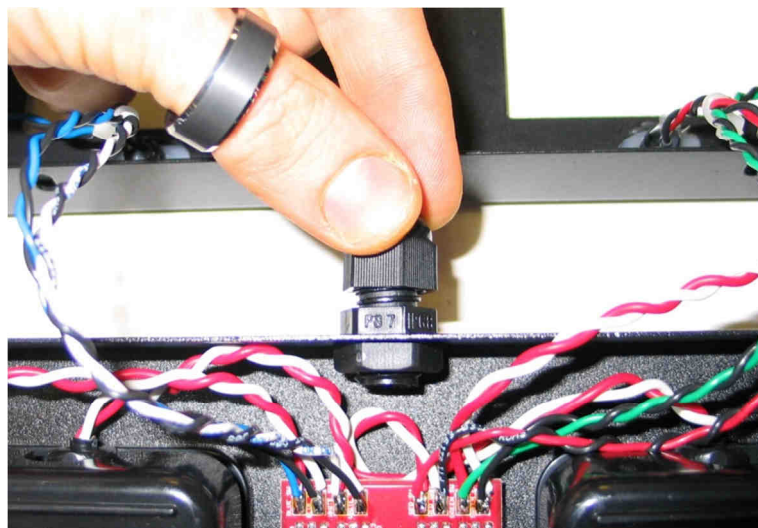




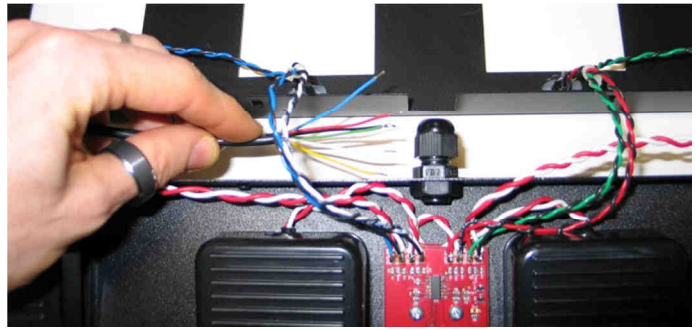
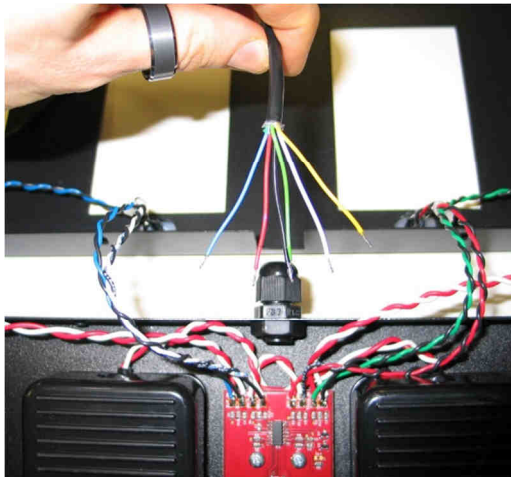
And for the last pedal wires with the green led wires



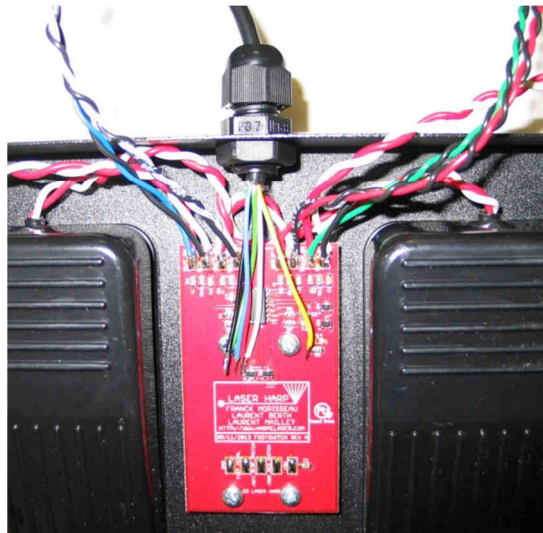
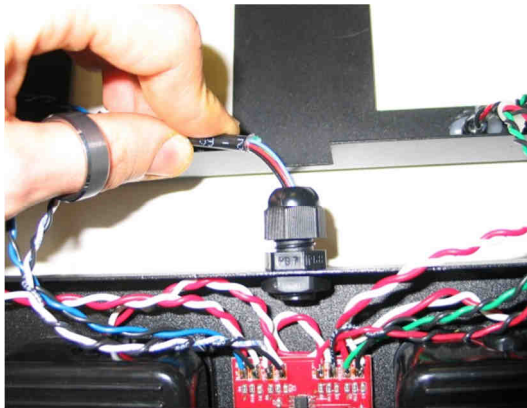
Unscrew the cable nut.



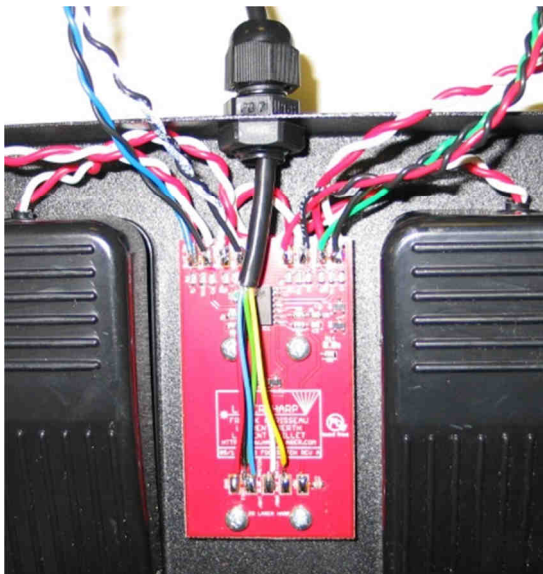
Take the 6 wires cable and pass it between the two shells.



Introduce it in the cable nut.



Adjust the cable length to have the stripped end of the wires near the PCB pads.



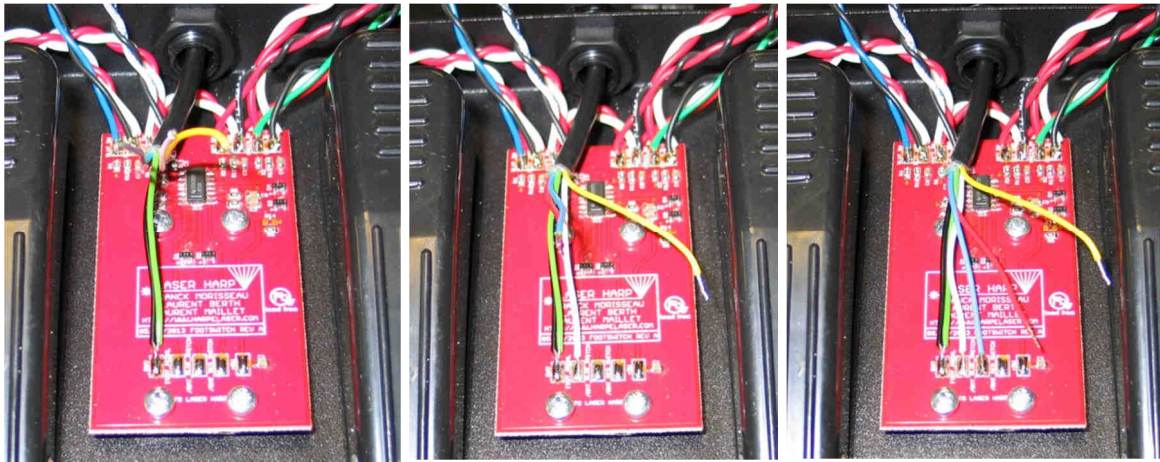


Now solder the wires

Green with black on the pad 1 « GND »

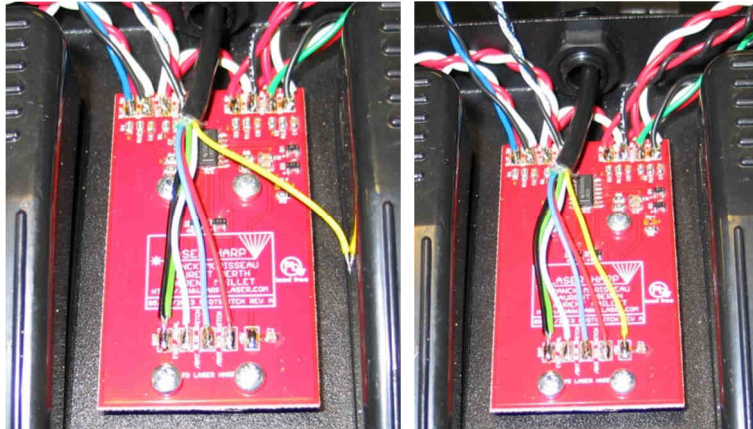
White on the pad 2 « FOOT PEDAL »

Blue one on the pad 3 « /RMT\_BLUE\_SWITCH »



Red on the pad 4 « /RMT\_RED\_SWITCH »

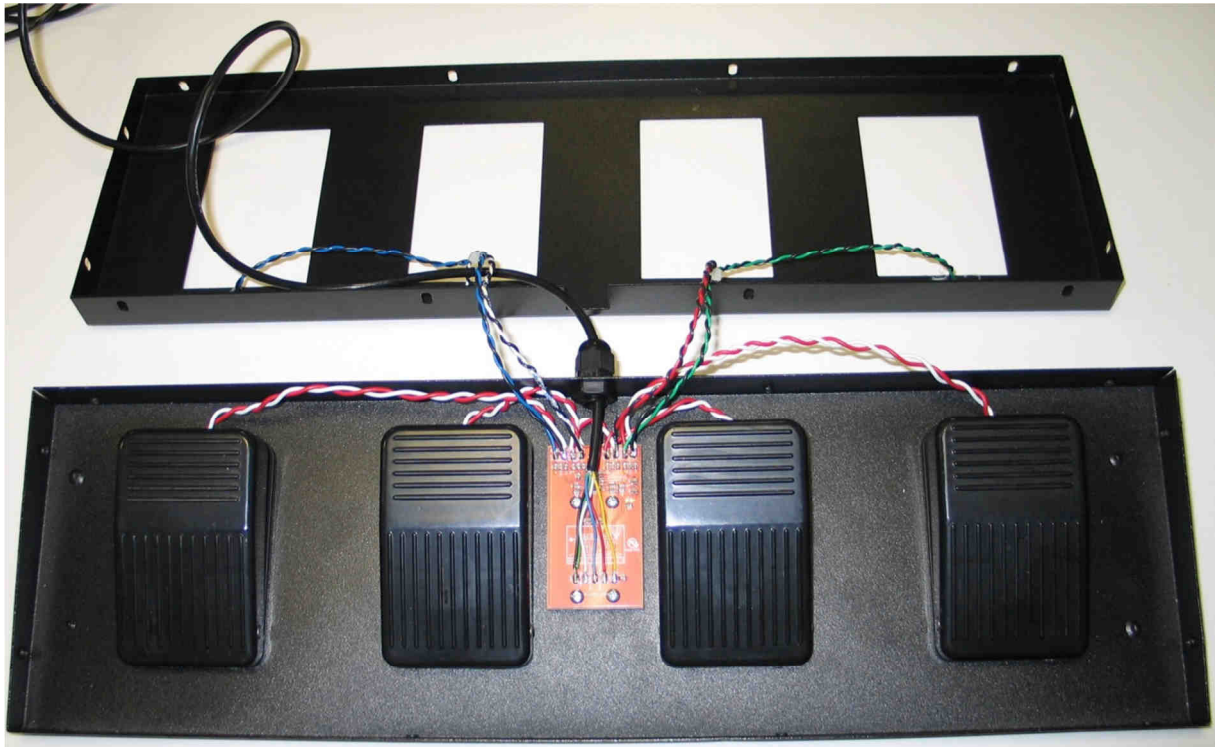
And the yellow one on the pad 5 « +5V »



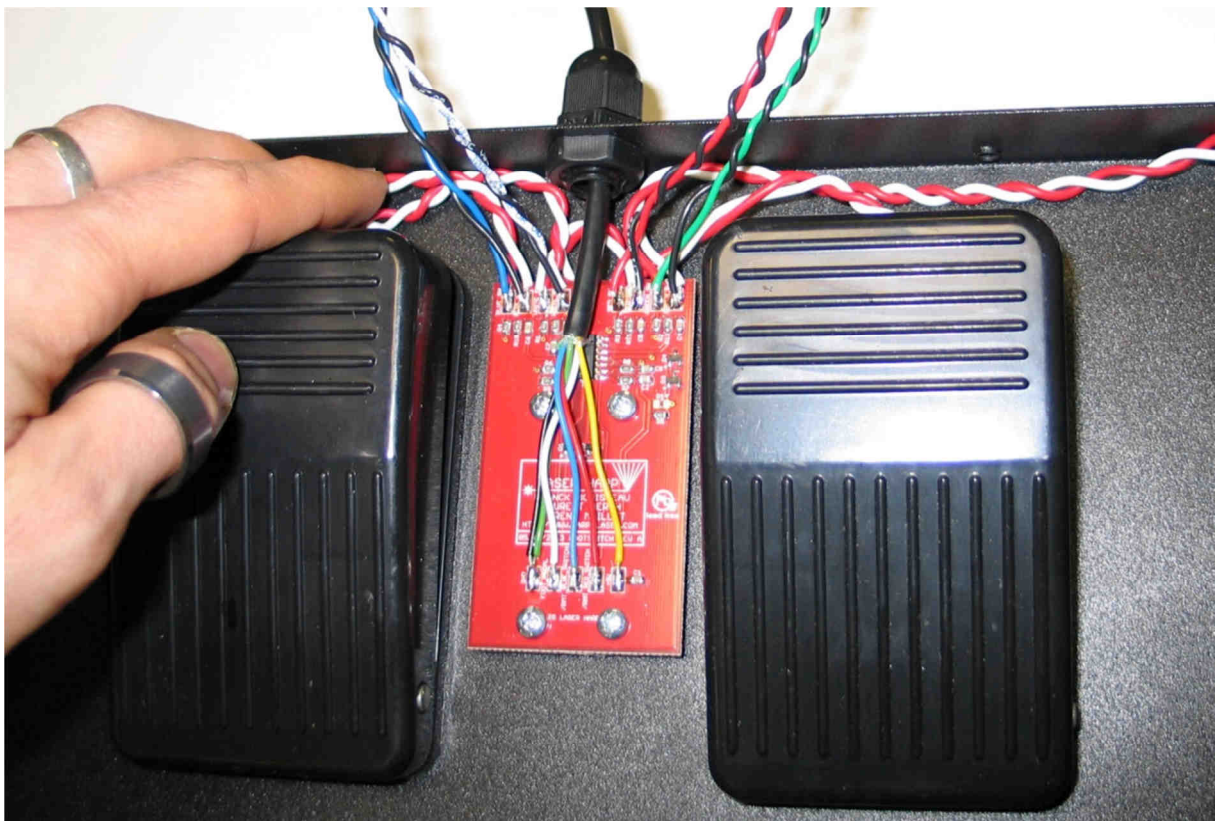
Tighten the cable nut when it's done.



It's almost over !

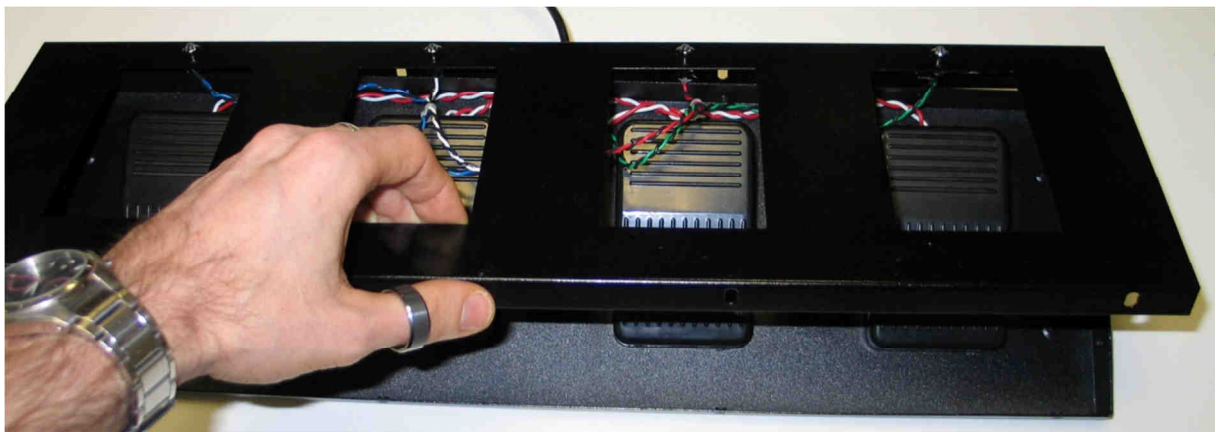


Rearrange the cables to avoid pinching them when closing the case.





Fold the top.



Check the cables position to avoid pinching them.



Do a last check before to putting the screws back



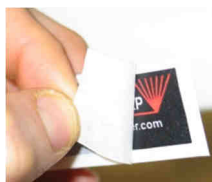
If all is ok you can put the screws loosely to allows mechanical adjustment.



When it's ok you can now tighten them.



Usually a small sticker comes with the PCB. Simply peel off the top sheet.





Degrease the surface with alcohol where you want to paste it and remove the white sheet of the sticker just before to place it.



And...voilà ! the footswitch is finished ☺



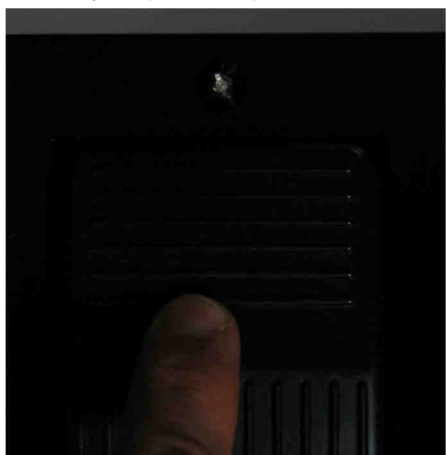
You can connect it to the Laser Harp controller to check if the light emitting diodes are working.







When you press a pedal the led must be turned off to show that the switch operates.



Now you must program the function of each pedal on the controller to use it.



LED	U1	U2	U3	U4
RED	ON	OFF	OFF	OFF
GREEN	OFF	ON	OFF	OFF
WHITE	OFF	OFF	ON	OFF
BLUE	OFF	OFF	OFF	ON
RED	ON	OFF	OFF	OFF
GREEN	OFF	ON	OFF	OFF
WHITE	OFF	OFF	ON	OFF
BLUE	OFF	OFF	OFF	ON

RS = RADIOSPARES  
 FR = FARNELL  
 DK = DIGIKEY

SCHEMATA: foot\_switch\_adapter  
 NOM: LASER HARP  
 REF.: FOOT SWITCH ADAPTER  
 REV.: A  
 DATE: 23/12/2013 14:58:45  
 PAGE: 1/1 A4H-GENESIS  
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 SOUMISE A MON ACCORD PREALABLE

MORISSEAU Franck  
 A.K.A. GENESIS

FIRST ISSUE 16/05/2013  
 LAST UPDATE 23/12/2013

LASER HARP

LEAD FREE

ALL SMD CAPACITORS ARE X7R UNLESS OTHERWISE SPECIFIED

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**Historique des révisions:**

V1.0 12/10/2014 : Création based on the french one

V1.1 08/11/2014 : adding hole drill dimensions

FOOTSWITCH ASSEMBLING GUIDE

V1.1 08/11/2014

Franck MORISSEAU

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