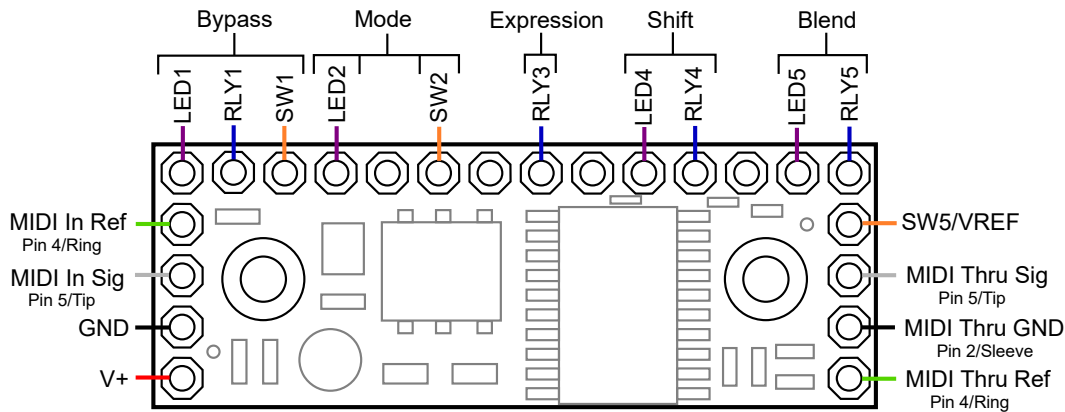


Goblin-SPST-2.0 in EHX Pitch Fork Installation and Usage

The Goblin-SPST-2.0 is able to control bypass, mode switch, blend knob, shift knob and the expression function of the EHX Pitch Fork and therefore make them accessible via MIDI. It's not necessary to install every single function. If one or more are not needed, they can simply be omitted.

Installation

First the Pitch Fork is disassembled, then all the wires get soldered to the Pitch Fork PCB and finally everything gets connected to the Goblin.



Step 1: Disassembly

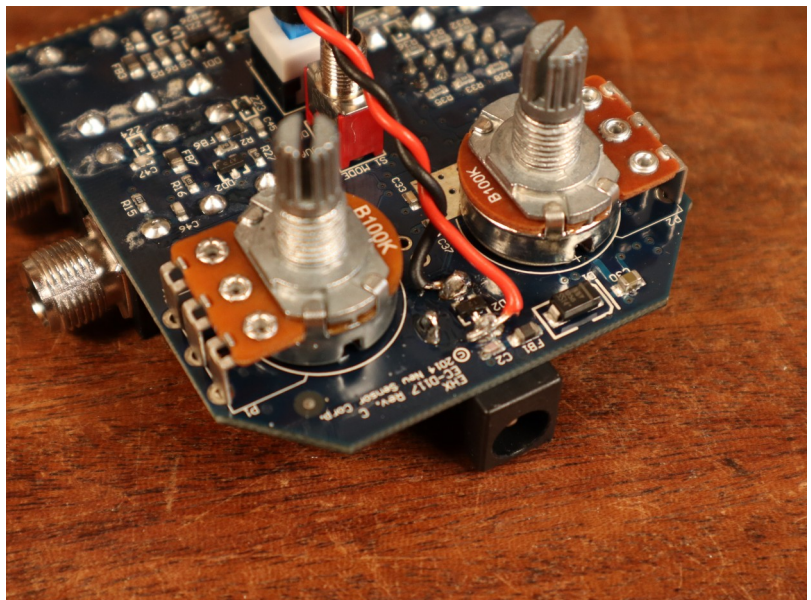
First remove the Blend and Shift knob. They can sit very tight. Use a hairdryer to warm them up a little and just pull them off. Be careful to not heat them up too much, they easily get deformed. Remove the screws from the bottom plate and all the nuts. Remove the PCB from the enclosure. You can now desolder and remove the 9V battery clip.



Step 2: Power Supply

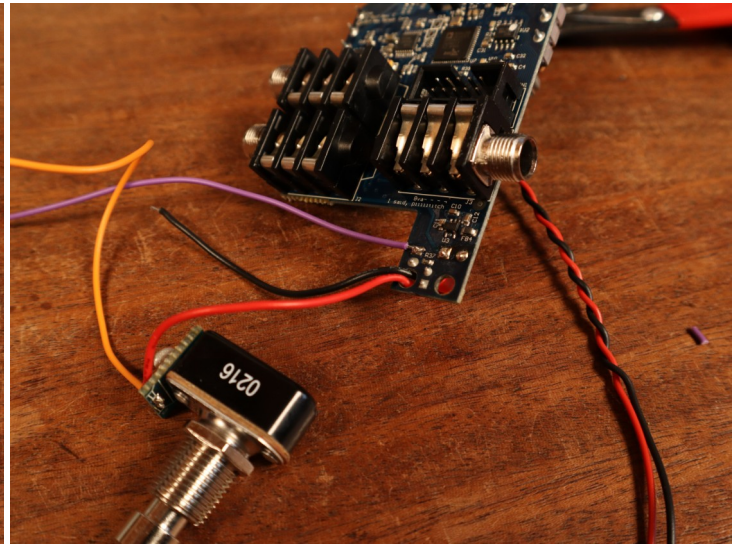
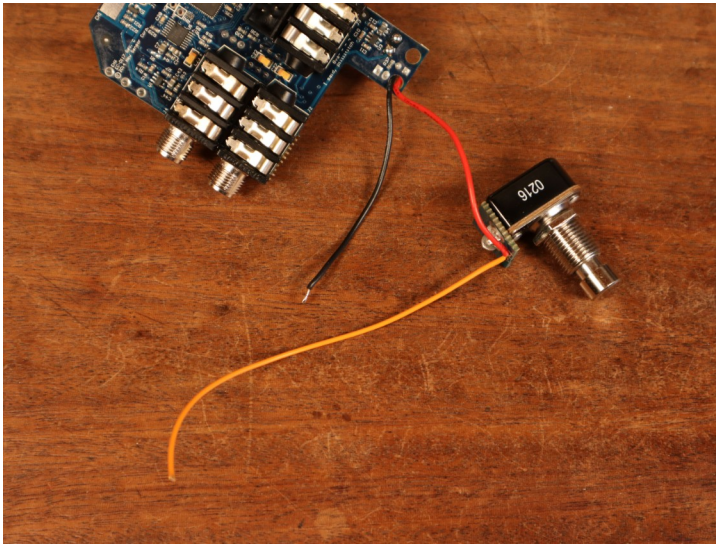
First solder the wires for the power supply to the bottom side of the DC jack. The one near the edge of the PCB is V+ (red in the picture), the other one GND (black in the picture).

If you plan to do the full mod incl. Blend and Shift knob, it's easier to do this step later, when the potentiometers are desoldered.



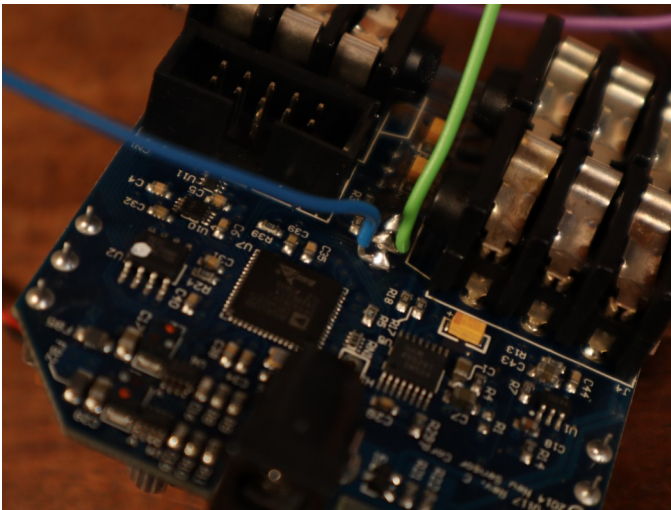
Step 3: Bypass Switch

Desolder the black wire from the switch. Solder a new wire, to where the black wire was (orange in the picture). Also solder a wire to the rectangular pad of the LED (purple in the picture). If your wires have different colors, or you run into issues, check with a DMM which one of the wires carries +3.3V. This is the black wire in the picture.



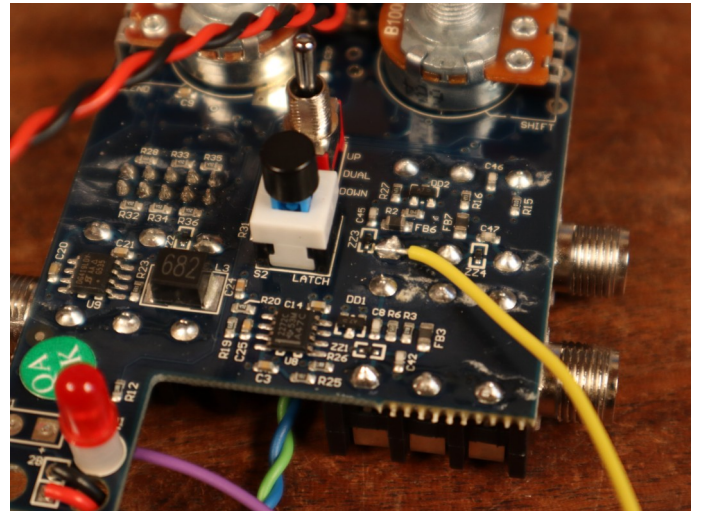
Step 4: Mode Switch

Two wires are needed for the mode switch. Connect one to the centre pin (green in the picture) of the mode switch and one to the pin closer to the DC jack (blue in the picture).



Step 5: Expression

Expression only needs one wire. Connect it to the tip of the expression socket (yellow in the picture).



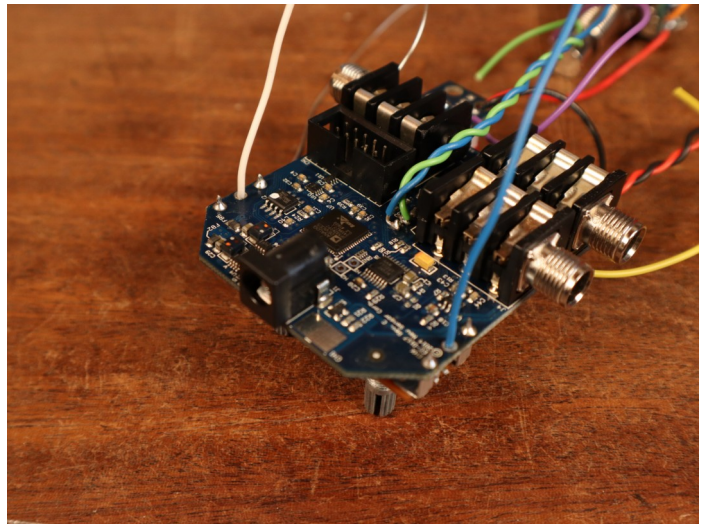
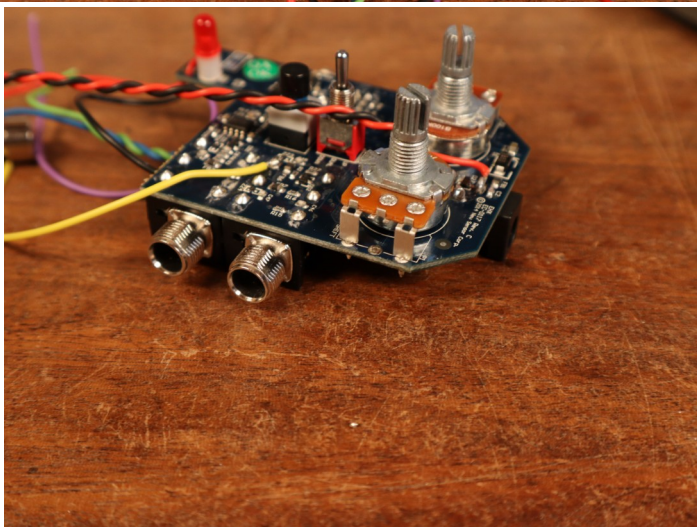
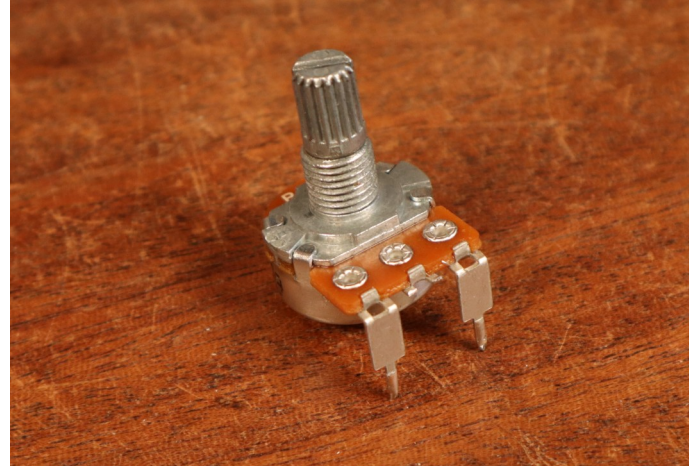
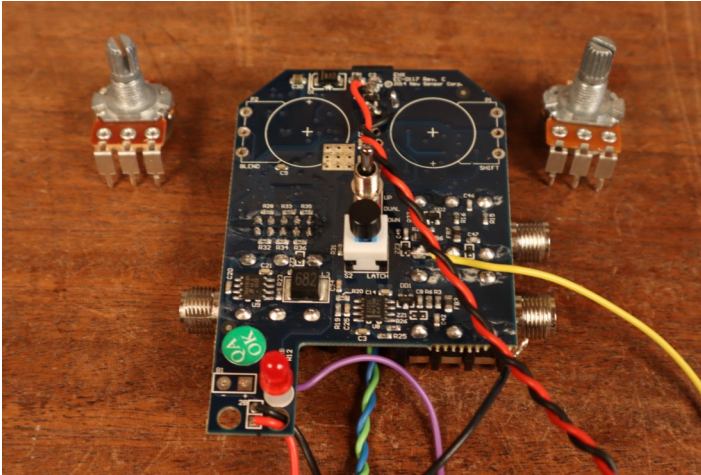
Step 6: Shift and Blend Knob

The potentiometers are a bit tricky. A wire must be soldered to the pad where the middle leg of the potentiometer is soldered to the PCB and one must be soldered to the middle leg of the potentiometer. The best known way so far is to desolder the whole potentiometer, clip off the leg and solder it back in. This is the way I describe here. Other ways are possible (for example cut it off with a Dremel).

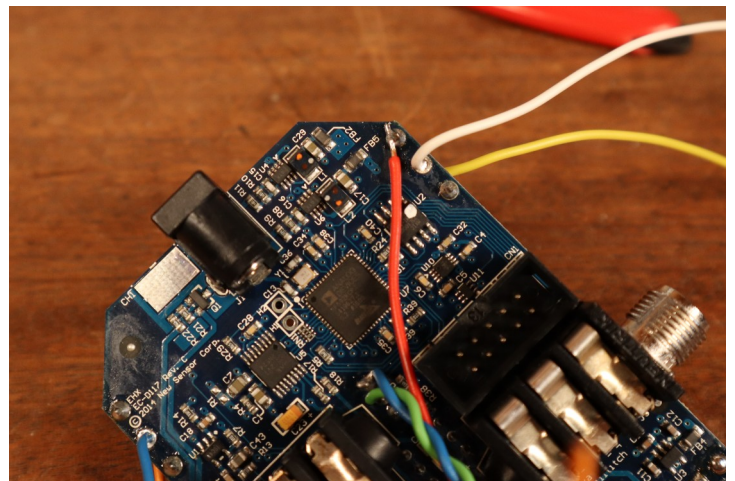
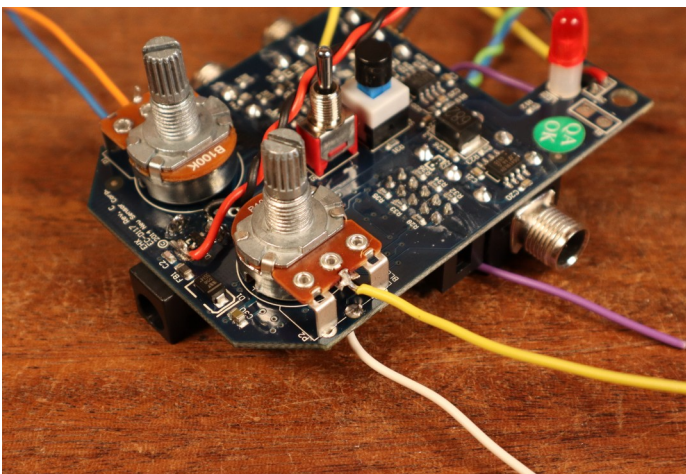
To desolder the potentiometers, carefully clamp the PCB in a vice or use anything else to have it fasten firmly. Apply a bit more solder to all three legs. Then move the soldering iron back and forth over all three legs at the same time. At the same time, pull gently at the potentiometer. The potentiometer should come off easily that way.

At the end of this video, I show how I do it: <https://www.youtube.com/watch?v=4CwRS5jHfT0>

Then cut off the middle leg of the potentiometers like in the picture and solder them back in. Be careful not to mix them up.



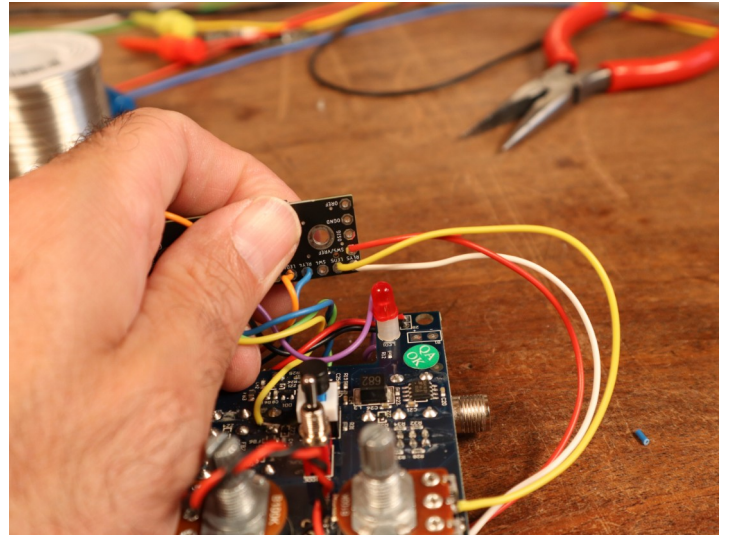
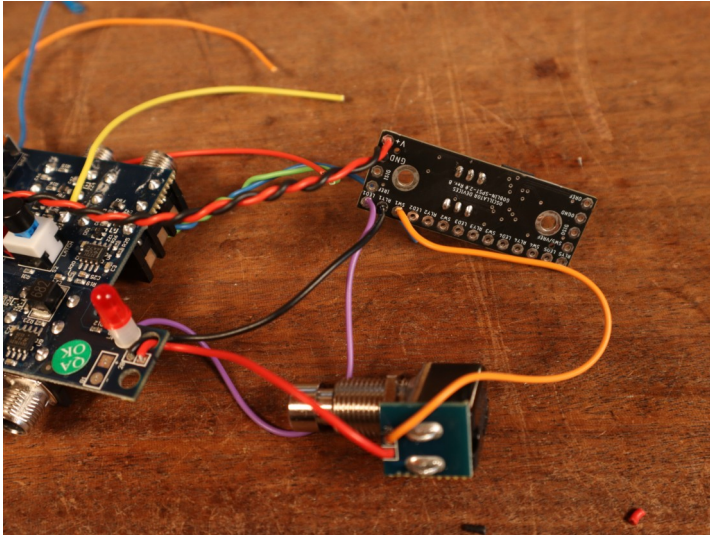
Then wires are soldered to the place where the potentiometer legs were in the circuit board (blue and white in the picture). Also two wires are soldered to the place where the potentiometer legs were cut off (yellow and orange in the picture). After that a last wire is needed for the reference voltage. This is soldered somewhere where there is 3.3V, like on the top leg of the blend knob, like the red wire in the picture on the bottom left.



Step 7: Connecting the Goblin

After we have all wires in place, it's time to connect the Goblin and do a first test. The wires are connected like this:

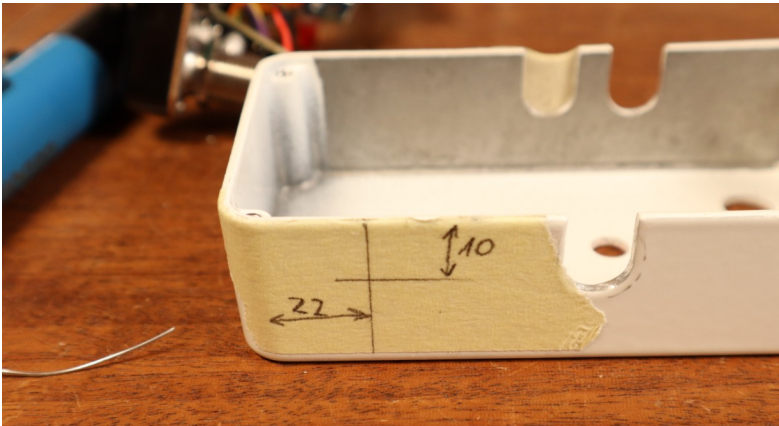
- Power Supply: **V+** and **GND**.
- Bypass: The black wire from the switch goes to **RLY1**, the one that has replaced the black wire goes to **SW1** and the LED wire goes to **LED1**.
- Mode Switch: The wire on the centre pin goes to **LED2**, the other one to **SW2**.
- Expression: The wire on the tip of the expression socket goes to **RLY3**.
- Blend and Shift Knobs: The wires that are soldered to the PCB go to **RLY4** (Shift) and **RLY5** (Blend), the wires that are soldered to the potentiometers go to **LED4** (Shift) and **LED5** (Blend). The wire that is soldered to the 3.3V (top pin of the blend knob in our case) goes to **SW5/VREF**.



Now some functions can be tested. Be careful, that the Goblin and the Pitch Fork aren't touching and plug in the power supply. The red LED of the Goblin should light up. Check if the bypass switch and the Shift and Blend knobs are working.

Step 8: Drilling the Enclosure

If you are using the mounting bracket, only two holes are necessary. Drill 10mm from the bottom and 22mm from the back like in the picture. Use an 8.5mm drill for the Isolated Mini TRS Sockets.



Step 9: MIDI Wiring and Reassembling

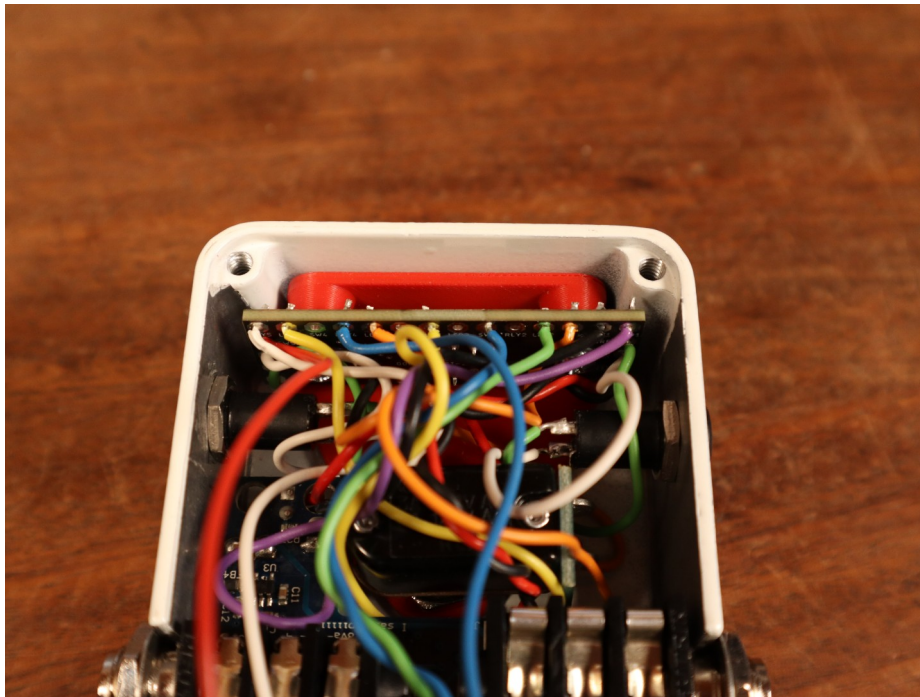
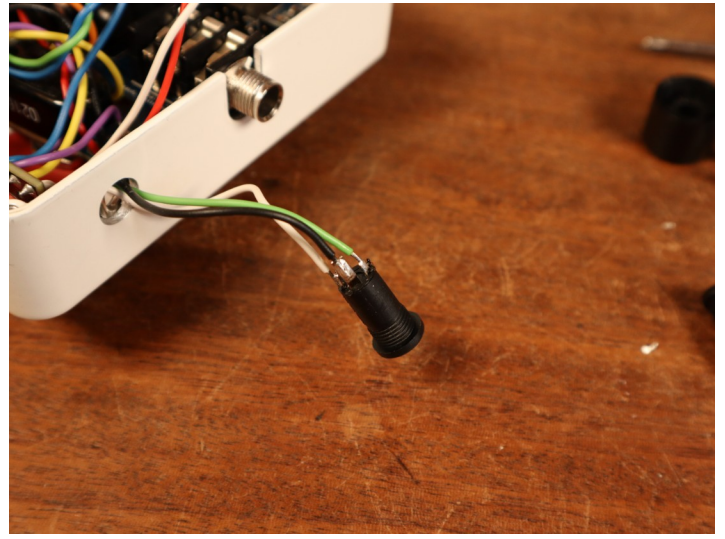
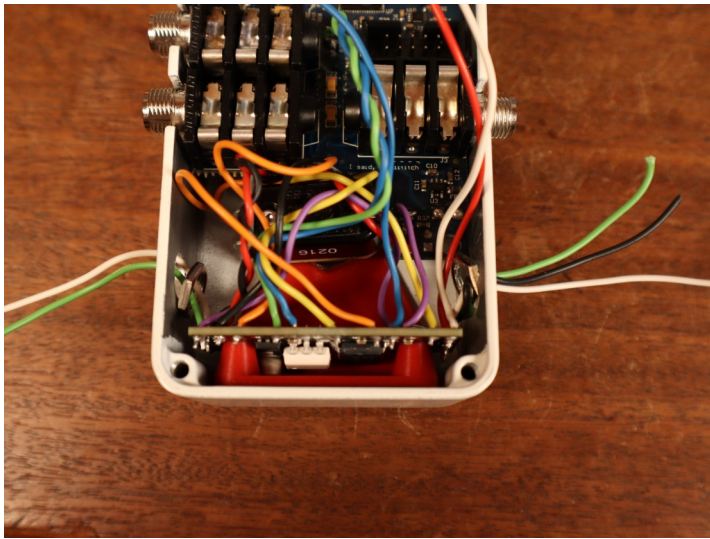
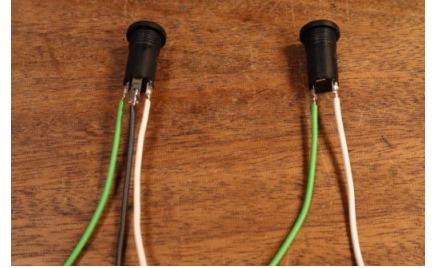
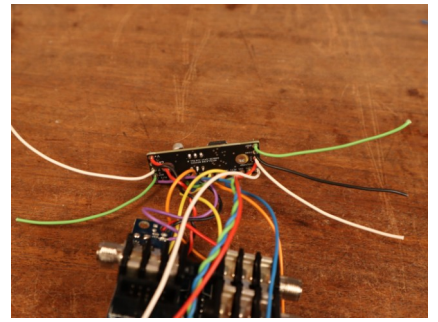
Now wires can be soldered to the MIDI ports. Three for MIDI Thru (OSIG/OREF/OGND) and two for MIDI in (IREF/ISIG). MIDI In has no GND connection.

The Goblin now can be screwed to the mounting bracket and the Pitch Fork can be carefully reassembled. The mounting bracket is fastened to the Pitch Fork with the bypass switch. Put the MIDI wires through the holes, but don't forget to put the washers on the inside.

Solder the wires to the sockets like in the picture on the right. For MIDI TRS Type A the connection to the Goblin is like this:

- White: Tip → ISIG/OSIG
- Green: Ring → IREF/OREF
- Black: Sleeve → OGND

The slightly longer sleeve lug of the input socket can be removed altogether.



Usage

Bypass

CC	#	Function
10	00	Turn off (with Latch mode activated)
	01	Turn on (with Latch mode activated)
	02	Toggle (with Latch mode activated)
	03	Hold (with Latch mode deactivated)
	04	Release (with Latch mode deactivated)

Expression (Pitch)

For expression to work properly, the latch mode has to be enabled and a dummy plug (either of not conductive material, or an unconnected TRS plug) has to be inserted into the expression socket.

CC	#	Function
50	0...127	Unity (0) to full shift (127)

Mode Switch

For the mode switch control to work, leave the actual switch in the middle position. Do not use the toggle switch, once a command for up or down is sent.

CC	#	Function
40	00	Dual (Shift up and down)
	01	Shift up
	05	Shift down

Presets

The Goblin-SPST-2.0 is able to recognize how the pedal is set and save that setting to one of 20 presets. These presets can be called up with PC commands. To get into *preset save mode* and save presets, proceed as follows.

1. Disconnect the device from the power supply.
2. Restore the power supply and wait until the Pitch Fork flashes shortly three times.
3. Immediately push the bypass button two times. The Pitch Fork again flashes three times (but a bit slower). You're now in *preset save mode*.
4. Set up the pedal how you like it. The Mode Switch now works normally and can be set to the position you like. When ready send a PC command between PC0 and PC19. The Pitch Fork flashes one time. The setting is automatically saved to this PC command.
5. Repeat step 4 as long as you like. To leave preset save mode, disconnect the device from the power supply

If you have problems, or you're not sure if you're in preset mode, unscrew the bottom plate and check the LED of the Goblin. If it flashes, you're in *preset save mode*.

MIDI Channel

The **Goblin's** MIDI channel is selectable. To change the MIDI channel, proceed as follows

1. Disconnect the device from the power supply and enable latch mode
2. Press the bypass button and restore the power supply while it is pressed. When the device flashes three times, release the bypass button. The device starts to flash its LED in a 1s interval.
3. Press the button according to the number of the desired channel (e.g. twice for channel 2). The **Goblin** acknowledges this by emitting short flashing impulses according to the number of the channel.
4. Once the desired channel is set, press the button and hold it down until the **Goblin** switches off completely.
5. Disconnect supply voltage. The next time the **Goblin** is started, it reacts to the selected MIDI channel.

To put the **Goblin** in omni mode (i.e. it responds to every channel) skip step 3.

Shift Knob

CC	#	Function
70	0	3 Octaves
70	6	2 Octaves
70	19	1 Octave
70	34	Minor 7th (m7)
70	49	Major 6th (M6)
70	63	Perfect 5th (P5)
70	76	Perfect 4th (P4)
70	89	Major 3rd (M3)
70	104	Major 2nd (M2)
70	118	Minor 3rd (m2)
70	127	Detune (D)

Blend Knob

CC	#	Function
90	0...127	Blend from no effect (0) to full effect (127)