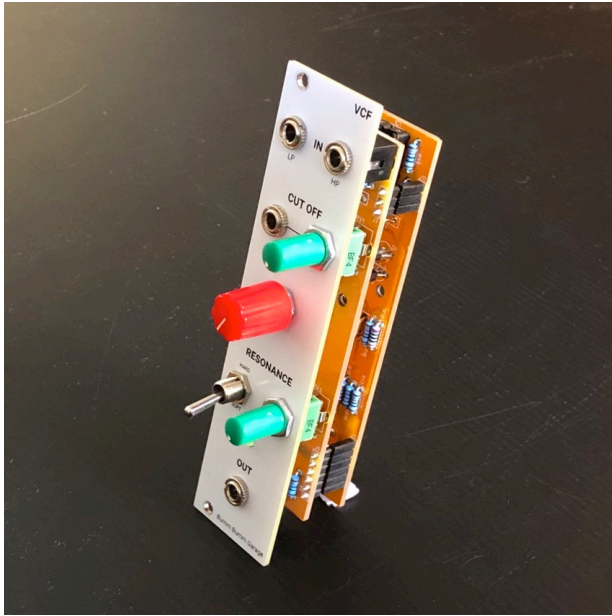


## Build Doc: Voltage Controlled Filter (VCF)



I built this voltage controlled filter for my techno rack. It's based on "Korg late MS20 filter" by René Schmitz.

René explains in the description how to add the high pass input. I didn't manage to make it a switch, so there are **two separate inputs for high pass and low pass** 🙄

Then I accidentally found out that if I remove one of the diodes in the original design, the resonance gets a crunchy color (which I find particularly nice for bass voices). So I implemented this function with a switch: **Soft and hard resonance**.

Have fun with it! Steffen.

### 1. Build The Module

Take a look at the pictures of the assembled module on the project page: <https://www.bummbummgarage.com/modules/vcf/>. Make yourself a plan of how you want to proceed.

There are three basic principles I follow for worry-free assembly of a module:

1. **Test each component** if you can. The time you spend doing this costs so much less than the uncertainty when something is not working somewhere. If you don't have a multimeter yet, I recommend you to get one and learn how to check electronic components.
2. **Start with the flattest components** (diodes, resistors) and build your way up (capacitors, IC holders, potentiometers). This way each component will lie flat when you flip the board over for soldering.
3. **Fix control elements to the front panel before soldering them.** To do this, place the components (pots, audio jacks, LEDs, etc.) in the holes provided and put the front panel on top. You don't solder them yet, but fix them with the appropriate screws at the front first. Then you solder. This prevents tensions during the final assembly, which could possibly break the solder joints.

Especially for this module design you should **straighten the support arms of the potentiometers** with pliers to maneuver them easily into the holes.

If you want to have a look at the **bill of materials (BOM)** or the **schematic**, please also visit the project page at the link above.

### 2. Have Some Filter Fun

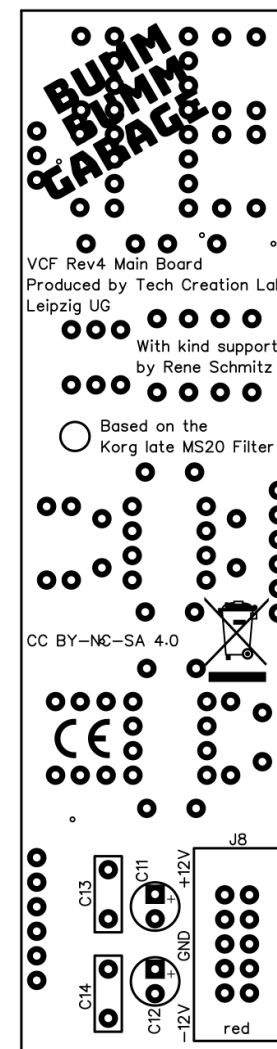
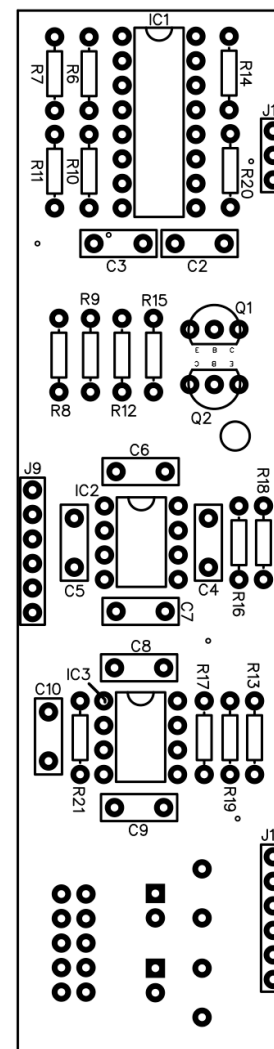
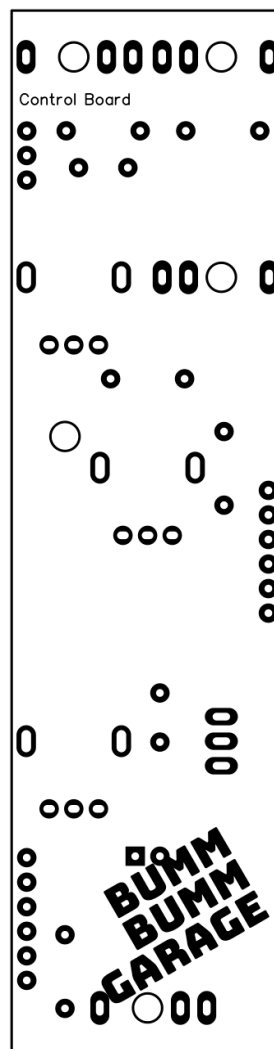
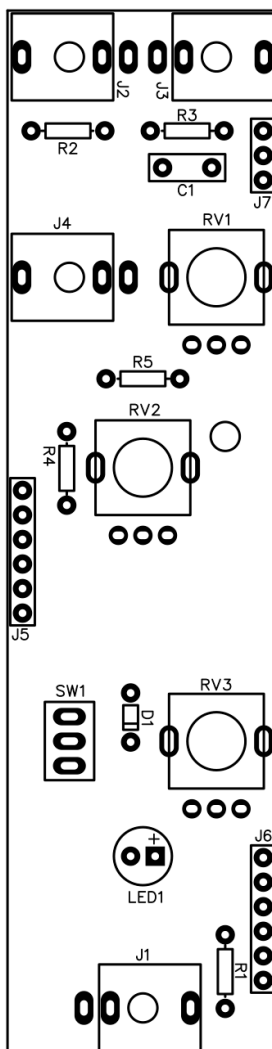
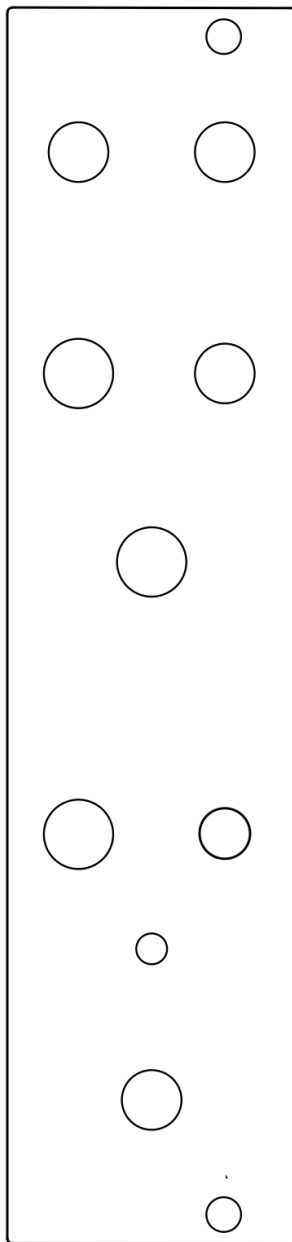
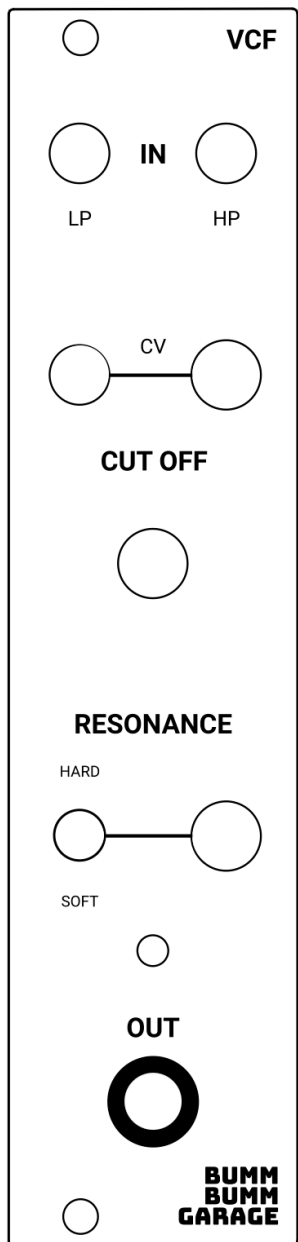
For a quick start, here are two ideas for using the voltage controlled filter. These are the main use cases I followed when developing the module:

1. **Low pass filter on chords:** <https://youtu.be/bDhkRAk-1UY>
2. **Low pass filter on bassline:** <https://youtu.be/bDhkRAk-1UY?t=48>

### 3. Send Me Your Feedback

If you have any thoughts, complaints or requests regarding the assembly or the use and sound of the module, please let me know via [bummbummgarage@posteo.de](mailto:bummbummgarage@posteo.de)

Thank you very much!




VCF Rev4 Main Board  
Produced by Tech Creation Lab  
Leipzig UG

With kind support  
by Rene Schmitz

Based on the  
Korg late MS20 Filter

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 Banana for scale