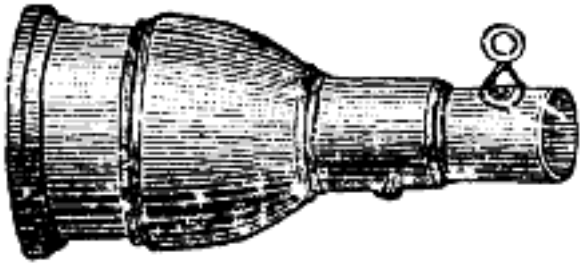


MÖRSER – Build guide

Introduction:

Mörser is a 12hp stereo filter with shared frequency control (but separate resonance controls) for both channels. Each channel also has a dedicated distortion unit which, via a switch, lets you decide which output you want to have distorted (highpass, bandpass or lowpass). The distortion is heavy and thick just like one would expect from a DE module and there is no blend knob. It's always 100% on. There are dedicated (non distorted) outputs for both lowpass and bandpass on each channel. On the input side there are separate inputs on both channels with a gain pot for adjusting the incoming signals strength, this is not to be underestimated since the incoming signals strength dictates pretty much how this circuit behaves. I strongly recommend using the input potentiometers and play around with the loudness of the incoming signal a lot, no matter what outputs you are using. In the middle you have a digital noise unit which is clocked. The tempo of this internal clock has been modded from the original version (se below) and is regulated via a potentiometer which goes from fast to clicks and cuts territory or "morse code" bursts. There is a dedicated noise output for making this part available to the rest of your system and other modules. The noise out is normaled to BOTH the cv input and the audio in on both sides. Making Mörser an awesome sound source on its own being capable or making rainforest sounds, morse code and sci-fi landscapes without any input signals. The left input is also normaled to the right input so you can create a stereo filtered signal with just one sound source. It"s a first out of (more) filthy filters named after 90's Bremen hardcore bands.

Acknowledgements:

So there is a lot to go through with this one, it draws heavy inspiration on the original WASP filter[1] launched in 1978 so credit to EDP for that one. I also drew inspiration on pretty much all available clones out there (CGS, Doepfer, Juergen Haible even Behringer!) and I decided to use the dirtiest most unstable (thus being the best to my ears) and borrow inspiration from all of these while adding my own flavor. Ken Stone (CGS) "designed" the noise circuit (CGS39) but doesn't want any credit or mentioning for it[2], I offer it here anyways since I owe Ken a lot for his amazing designs and help during my DIY years. Without him Djupviks would never have existed.

Build instructions:

This one has DIP IC (CD4006 – see BOM) for the noise chip so I usually start with soldering the DIP socket[3] for it first of all. Usually I put it in place first, making sure that the outline on the pcb matches the socket so its not backwards. The pitting on the socket should match the one on the pcb . I usually flip it over make sure all pins are peeping out just the same before I solder pin 1 and 8 before doing the rest.

The rest is straight forward. I usually place the power header and solder it in first. Then I place all the jacks and solder in the ground pin (the one sticking out from the jack) from above. Place the 1M LOG pot first (RV7 on the pcb) then the other pots, the led (short leg through the square pad), the switch and put the panel on and make sure everything looks good from the front. Solder everything in. ¨

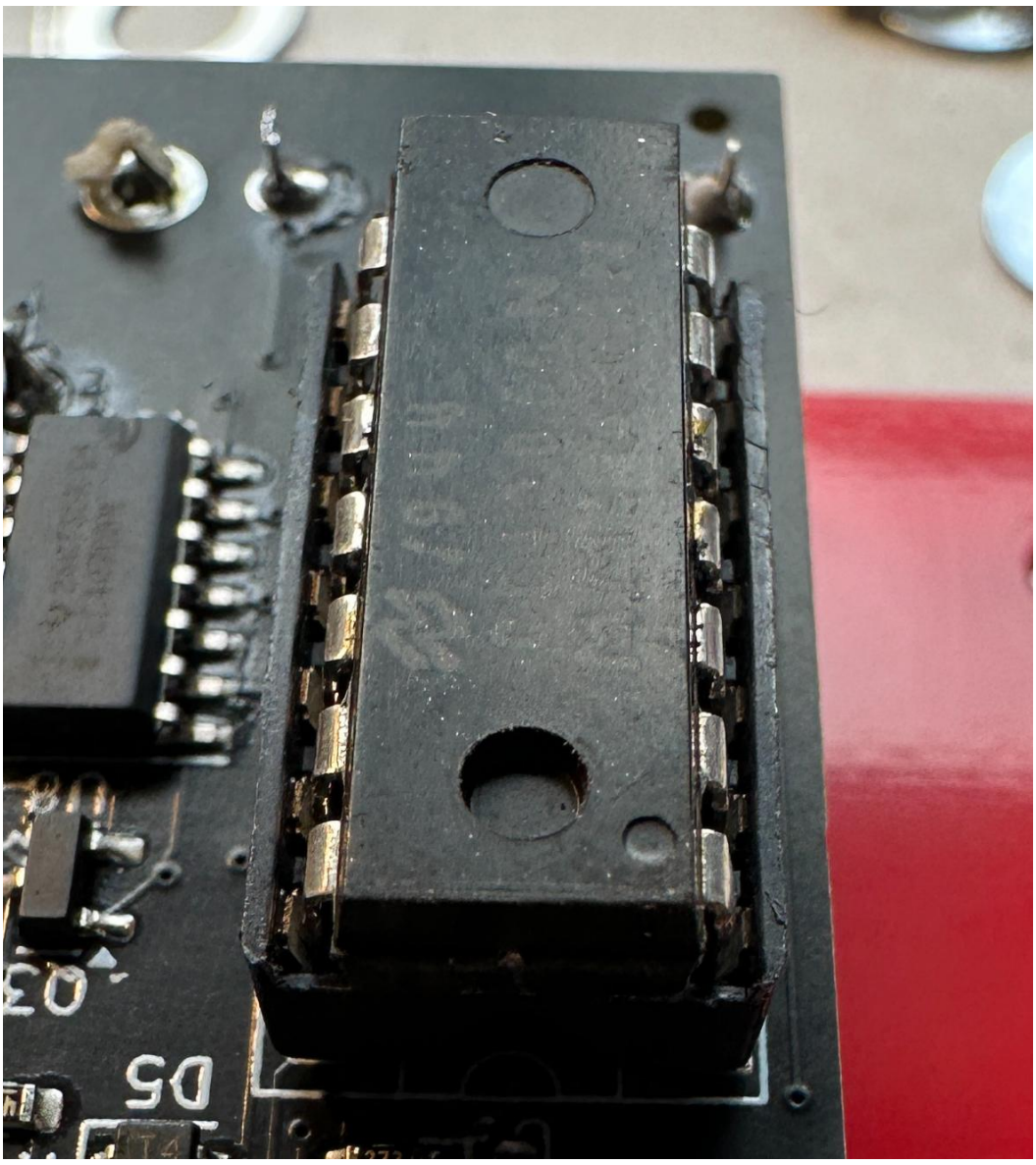
Disclaimer, the on-on-on switch needs to be type A/1 in order for it to work. If you use a Type B/2 switch it will only give you 2 out of the three modes. The bom is linked to a correct switch.

[1] https://www.soundonsound.com/reviews/edp-wasp

[2] " That noise source was based on that of the ETI 4600. All I did was add a VCO. No permission or credit is needed" from an email from Ken on 2025-04-23

[3] https://www.taydaelectronics.com/connectors-sockets/sockets/dip-sockets/14-pin-machine-tooled-ic-socket.html

Insert the DIP IC into the holder that you soldered first, make sure pin one is matching pin 1 on the pcb, if not the IC will be fried when you plug it in. Then double check the polarity for the IC one extra time.



The IC-chip has a small circle indicating ping #1, it should be facing the middle of the board like shown in the picture above.

Then double check for any shorts before plugging it in and testing it, the attach all nuts before the knobs. You are then done. Please enjoy.

BOM

Part	Designator	QTY	INFO	Product link
CD4006	U9	1	CD4006 IC DIP package	https://www.elextra.dk/sv-se/p/cd4006-18-bit-static-shift-register-dil14/H27258
IC-socket	U9	1		https://www.taydaelectronics.com/14-pin-dip-ic-socket-adaptor-solder-type.html
Thonkiconns	J1-J10	10		thonk, tayda, aliexpress: https://www.thonk.co.uk/shop/thonkiconn/
Alpha 9mm potentiometer T18 100K Lin	RV1-RV6	6	Pots	https://www.thonk.co.uk/shop/alpha-9mm-pots-vertical-t18/
Alpha 9mm potentiometer T18 1M Log	RV7	1	Pot	https://www.thonk.co.uk/shop/alpha-9mm-pots-vertical-t18/
LED white 3mm	D8	1		https://www.taydaelectronics.com/leds/round-leds/3mm-leds/white/led-3mm-white-water-clear-ultra-bright.html
DPDT ON-ON-On	SW1, SW2	2	Switch	https://www.taydaelectronics.com/mini-toggle-switch-dpdt-on-on-on-mts2033.html (MUST BE TYPE 1/A)
Eurack power pins 2x5	For RV1-RV6	6	Must be Black	https://www.thonk.co.uk/shop/micro-knobs/
Tall Synthpointer - Small - T18 Shaft	For RV7	1		https://www.thonk.co.uk/shop/tall-satin-synthpointer-knobs/
Micro knob T18 black	SW 1	6		https://www.thonk.co.uk/shop/micro-knobs/