

1 WERKSTATT-01

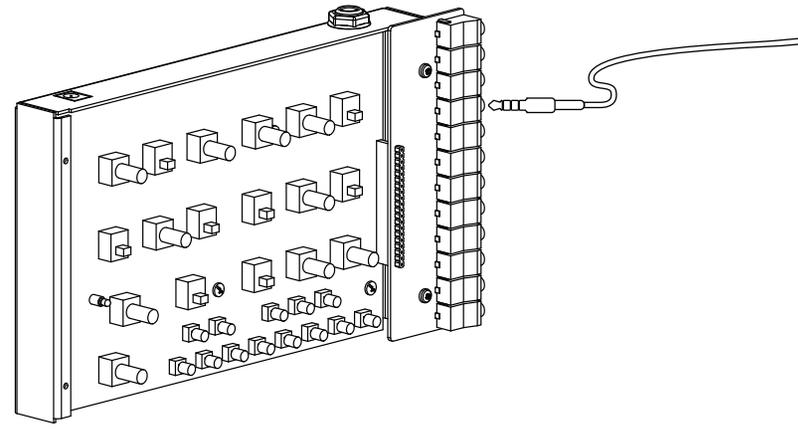
The 20-pin expansion header on the Werkstatt-01 brings many of its important CV Ins and Outs to the front panel. The Werkstatt-01 CV Expander converts most of these to grounded 3.5mm jacks that can be used with other CV-equipped analog gear.

CALIBRATING THE WERKSTATT-01

You must remove the front panel of your Werkstatt-01 and calibrate it to properly respond to a 1 volt per octave external control voltage.

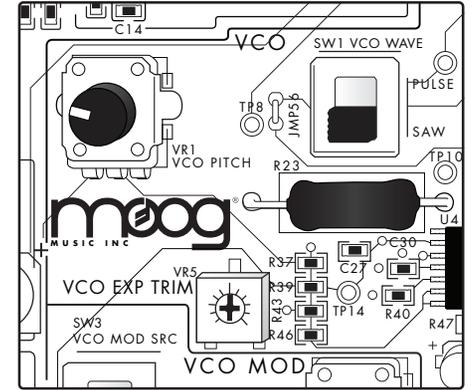
The VCO EXP IN connection point on the Patchable Header can be set to receive 1 Volt per Octave control signals. This calibration is performed using the Variable Resistor trim pot [VR5] labeled VCO EXP TRIM. It is located on the Printed Circuit Board, below and to the right of the VCO Pitch potentiometer.

Remove the front cover of your Werkstatt-01. Plug the CV expander board into the Header on the Werkstatt-01 PCB such that the jacks are pointing towards the right. Install the two sheet metal screws through the CV expander board into the bottom panel and snug but do not tighten. This makes the ground connection between the jacks and the Werkstatt-01 PCB. Apply a 1V/Octave signal from a CV controller of your choice to the Jack labeled VCO EXP FM IN (J4) on the CV Expander Board. Power up.



CALIBRATING THE WERKSTATT-01

To calibrate, play the lowest note on the Werkstatt-01 keyboard, and set the VCO FREQ knob near the center position. Send a 0 VDC signal to the VCO EXP FM IN jack. The VCO in this setup will typically produce a frequency somewhere near 200 Hz, which is between G3 and A3. Adjust the VCO FREQ knob slightly until your tuner shows a steady note that is neither sharp nor flat. The precise note is unimportant, but you will want to take note of the pitch and octave (i.e. G3 or A3, etc.) You can use an instrument tuner for this function. Next, send a +3VDC signal to the VCO EXP FM IN Jack. Adjust VR5 to adjust the output until the new pitch equals 3 Octaves above the pitch measured at 0 VDC. For example if you initially measured a G3 at 0V, then at +3VDC you will want to adjust VR5 until your tuner displays G6 (3 octave increase in pitch.)



Repeat this process to verify calibration accuracy.

Remove the screws for the CV Expander grounding and unplug the CV Expander board. Replace the front panel of the Werkstatt-01 to complete the installation of the CV expander.

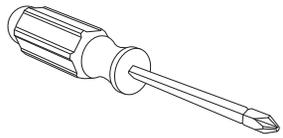
A NOTE ABOUT 1V PER OCTAVE CV

In analog circuits, not all CV Outputs are designed the same. So it is very possible that when the Werkstatt-01 Pitch CV input is calibrated to one source of a 1V/Oct CV, it may respond slightly different to a different source of 1V/Octave CV, especially if that source is driving multiple loads, or if the source is not calibrated accurately. You can re-calibrate your Werkstatt-01 or the source of 1V/Oct CV depending on the situation or your preference.

CV EXPANDER

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WHAT YOU WILL NEED

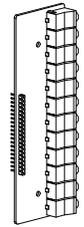


1x #1 Phillips Head Screwdriver

THIS KIT INCLUDES



2x #4 x 5/16 Pan Head Phillips, sheet-metal screws



1x Werkstatt-01 CV Expander PCB

WARNING

Please use the same cautions in connecting CV equipped gear as described in the Werkstatt-01 User's Manual. Because the CV adapter is a PCB mounted on the outside of the Werkstatt-01, please take extra caution not to drop the unit. Rough use may result in damage.

INPUTS

- VCA:** 0V to +5V in VCA EG Mode, +/-2.5V in VCA ON Mode
- VCF:** -5V to +5
- VCO LINEAR FM:** +/-2.5V (This is an inverting control input)
- VCO EXPONENTIAL FM:** -5V to +5V, 1V/Octave, trimmable
- LFO CV:** - 5V to +5V (Negative CV slows LFO more than panel)
- VCF AUDIO:** Unbuffered/Unmixed AC coupled input to VCF.

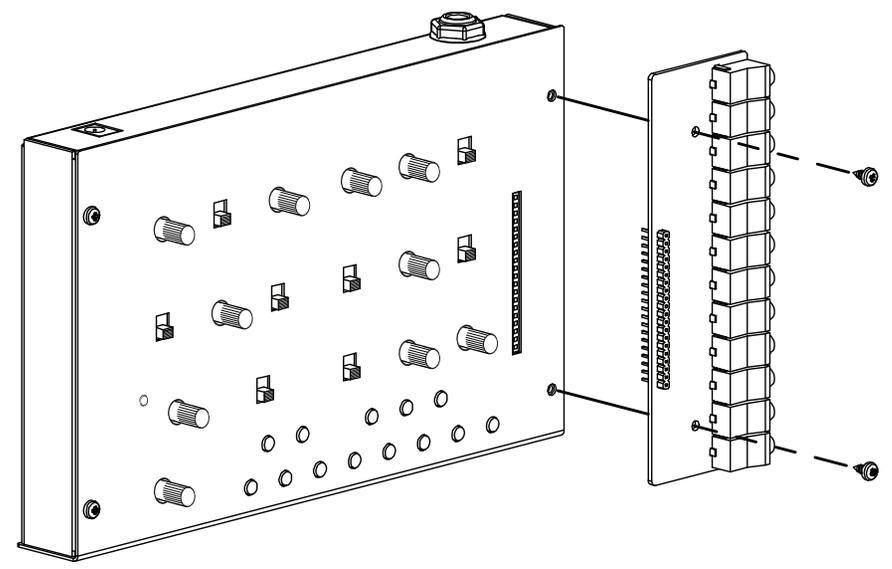
OUTPUTS

- KB CV:** Nominal 0.3V/semitone from 1 octave keyboard (Attenuate for 1V/Octave)
- GATE:** 0V (off) to +5V (on) gate signal generated from low note priority/legato Keyboard circuit.
- EG:** Simple ASD or AD type Envelope Generator, 0 to +5V signal
- LFO:** -2.5 to +2.5V wave shape selected from LFO Wave Switch.
- VCF:** -2V to +2 V signal for audio or CV uses.
- VCO:** 0V to +5V signal, shape selected by VCO Wave Slide Switch.



INSTALLATION

- Step 1: Remove the two screws on the Werkstatt-01 right front panel.
- Step 2: Carefully plug the header pins on the bottom of the CV expander into the expansion header of the Werkstatt-01 so that the bottom of the expander circuit board is flush with the top of the front panel and the pins are fully seated in the female header.
- Step 3: Install the 2 screws included with this kit through the holes in the expander PCB that line up with the holes in the Werkstatt-01 panel. Tighten until they are secured, taking care not to over-tighten.



NORMALING VCO OUT TO THE VCF INPUT

An optional jumper position (JMP1) is included on the CV Expander PCB to normal the VCO output to the VCF Audio Input. With this modification and nothing plugged into J6 (VCF Audio In) the VCF processes the VCO signal, but an external signal plugged into this input will break this connection, allowing the processing of just the external signal by the VCF without mixing with the VCO.

To use this feature, cut or remove JMP57 on the Werkstatt-01 BRD-10-011-1111 PCB, and install a wire jumper into the JMP1 position of the BRD-10-011-1112 PCB.

CV EXPANDER