Tremolo Factory

Based on:
Zvex Seek Trem

Number of parts:
Average, total 57 components

Enclosure type:
1590bb

Effect type:
Complex tremolo effect

Technology:
Vactrol / Photoresistor

Get your board at:
Tremolo Factory

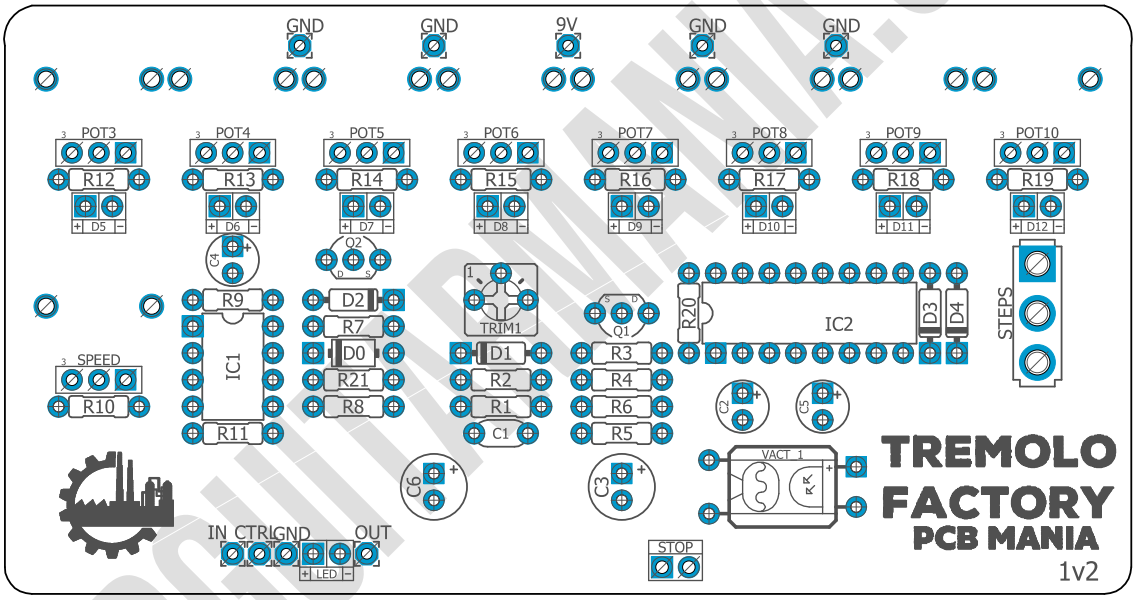
Build difficult:
Intermediate

Power consumption:
9V

Get your kit at:
Das Musikding (Europe)

Project overview:

Inspired by Zvex Seek Trem, the Tremolo Factory Rhythmic has all its well-oiled machinery ready to produce a ton of tremolos effects with complex patterns.



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Introduction

Are you up to this new industrial revolution? The purpose of this factory-board is to maximize the assembly of as many complex tremolos as possible. Now join us on this factory tour to observe the line production processes at work:

Via toggle, you can choose if either 4,6 or 8 potentiometers send an impulse to a decade counter that hits an optocoupler (or white clear LED and LDR - Easier to source) and then goes its way back to the Tremolo circuit. This awesomely unique and straightforward take allows you to manufacture your own patterns with a minimal amount of easy-to-source parts. The second momentary footswitch resets the pattern, so you're not starting in the middle of it when engaging.

For a circuit test, the LEDs need to be placed in the PCB, or you will not get any Tremolo going on. We recommend using at least one metal shaft 9mm pot for the speed control, or the PCB will be held in place only by the toggle. We tried using 3 metal shaft 9mm potentiometers in our build. Another thing to keep in mind is that these 9mm plastic shaft pots require precise drilling and should be soldered with everything in the enclosure to allow a smooth rotation.

Now that you have seen how the making process works is your time to build this industrial setup. Are you ready to have a workshop of unlimited tremolos mass production in your own house?

Controls

Each knob labeled "POT" controls different steps of the tremolo sequence.

- POT4
- POT5
- POT6
- POT7
- POT8
- POT9
- POT10
- SPEED

Switches

- Stop
- Steps

Bill of materials

Resistors	
Part	**Value**
R1	1m
R2	2m7
R3	2m7
R4	510r
R5	470r
R6	10k
R7	100k
R8	100k
R9	10k
R10	10k
R11	22k
R12	33k
R13	33k
R14	33k
R15	33k
R16	33k
R17	33k
R18	33k
R19	33k
R20	33k
R21	4k7

Capacitors	
Part	**Value**
C1	100n

Electrolytics Capacitors	
Part	**Value**
C2	10u
C3	100u
C4	1u
C5	1u
C6	220u

Potentiometers	
Part	**Value**
POT3	100k B
POT4	100k B
POT5	100k B
POT6	100k B
POT7	100k B
POT8	100k B
POT9	100k B
POT10	100k B
SPEED	100k B

Trimpots	
Part	**Value**
TRIM1	5k

IC	
Part	**Value**
IC1	TL072
IC2	CD4017BE

Transistors	
Part	**Value**
Q1	BS170
Q2	BS170

Vactrol	
Part	**Value**
VACT_1	vtl5c3

Switches	
Part	**Value**
STOP	SPST
STEPS	SPST (On/Off/On)

Diods	
Part	**Value**
D0	1n5817
D1	1n757a
D2	1n4148
D3	1n4148
D4	1n4148
D5	3mm LED
D6	3mm LED
D7	3mm LED
D8	3mm LED
D9	3mm LED
D10	3mm LED
D11	3mm LED
D12	3mm LED
LED	3mm Red LED

Shopping list

Resistors		
Qty	**Value**	**Parts**
2	100k	R7, R8
3	10k	R6, R9, R10
1	1m	R1
1	22k	R11
2	2m7	R2, R3
9	33k	R12, R13, R14, R15, R16, R17, R18, R19, R20
1	470r	R5
1	4k7	R21
1	510r	R4

Capacitors		
Qty	**Value**	**Parts**
1	100n	C1

Electrolytics Capacitors		
Qty	**Value**	**Parts**
2	100u	C3
1	10u	C2
2	1u	C4, C5
1	220u	C6

Potentiometers		
Qty	**Value**	**Parts**
9	100k B	POT3, POT4, POT5, POT6, POT7, POT8, POT9, POT10, SPEED

Trimpots		
Qty	**Value**	**Parts**
1	5k	TRIM1

IC		
Qty	**Value**	**Parts**
1	CD4017BE	IC2
1	TL072	IC1

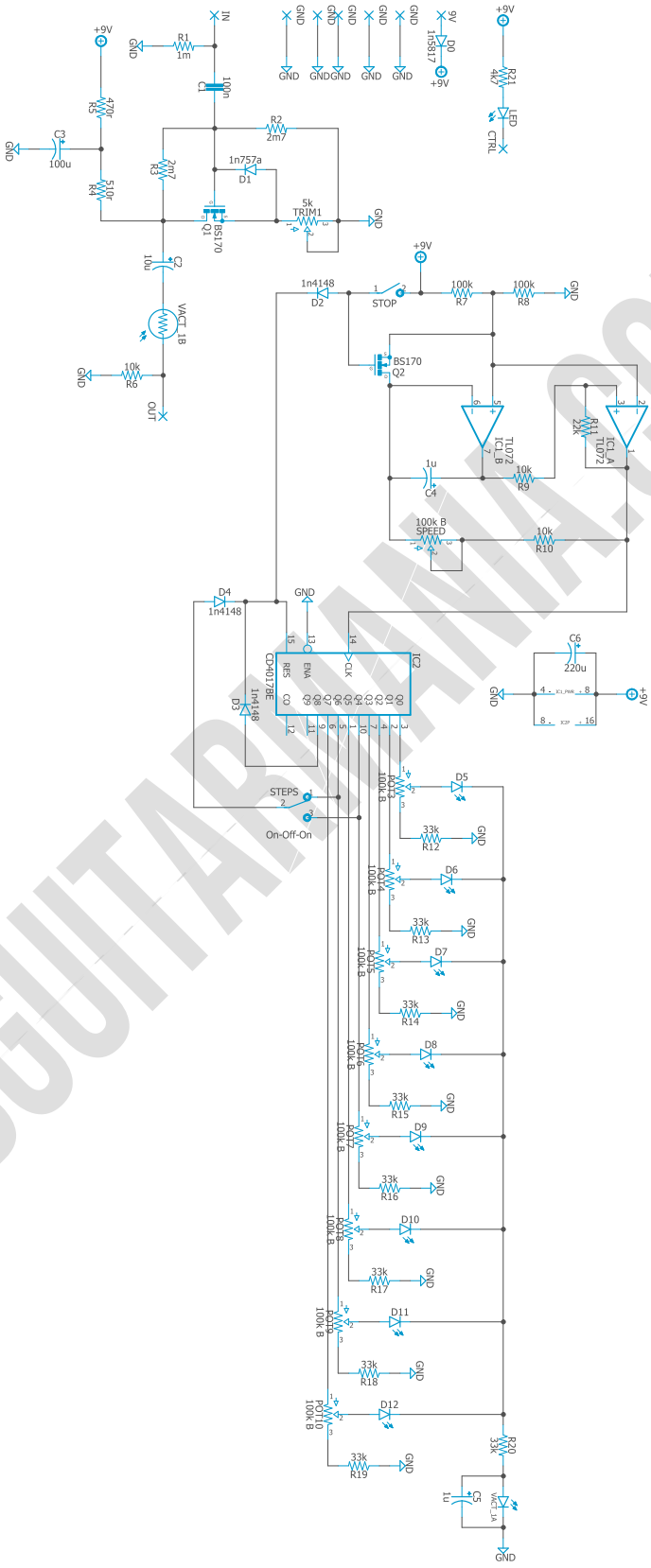
Transistors		
Qty	**Value**	**Parts**
2	BS170	Q1, Q2

Vactrol		
Qty	**Value**	**Parts**
1	vtl5c3	VACT_1

Switches		
Qty	**Value**	**Parts**
1	SPST (On/Off/On)	STEPS
1	SPST	STOP

Diods		
Qty	**Value**	**Parts**
3	1n4148	D2, D3, D4
1	1n5817	D0
1	1n757a	D1
8	3mm LED	D5, D6, D7, D8, D9, D10, D11, D12
1	3mm Red LED	LED

Schematic



Components Recommendations

As many people like to experiment with some pedals with higher voltage, always ensure your **electrolytic capacitors'** max tolerance is over 25v.

This board has been tested using Film box capacitors for most of the values over 1nf and ceramics discs for those under 1nf. However, high-quality components such as Wima's Capacitors and Panasonic's electrolytics can deliver a better performance.

All the resistors used for testing this project are 1/4W Metal Film.

The BOM and Shopping list are exclusive regarding this project. It doesn't include all the hardware like the 3PDT bypass switch, audio/dc jacks, enclosure, etc.

Build Notes

If this is one of your first projects, I recommend you to take a look at our Pedal Building Guide.

For a successful and tidy build, it's recommended the following order:

1. Resistors & diodes
2. Capacitors, starting with the smaller ones and the ceramic ones.
3. Electrolytic capacitors (always check the polarity)
4. Transistors
5. Wires
6. Potentiometers and switches
7. Off-board wiring

Wiring Diagram

All our projects include a free 3PDT Board to make the wiring easier and tidier. Also, all of our PCBs feature the status LED on board.

The pad named "Ctrl" or "LED" is the one that controls the status of the led; wire it to the "LED" pad on the 3PDT board or in the control slug of your 3PDT.

This board has been designed to match our EZ 3PDT PCB; check it here to access our Pedal Wiring Guide.

Drill Template

This Project has been planned to fit into a 1590bb enclosure type.
Check the Attached “Drilling templates” to drill the box properly. The files are on Scale 1:1, ready to print on an A4 page.

Licensing and Usage

We really appreciate your trust and support in buying this PCB, as well as your will to dive into the DIY electronics world. For us, that's why you can make this project work properly and enjoy not only the building process but also experiment and play with it on your rig.

We try to reply to every question we receive on our email or our social media. Still, we try to encourage all our customers to join our PCB Guitar Mania – Builders Group on Facebook to post all your doubts, issues, suggestions, or requests, share your builds, and have some feedback from other fellow builders and us!

We tested all our projects following this same guide on their standard configurations. Although, not all of the variations and mods have necessarily been checked. These are suggestions based on the schematic analysis and the experiences and opinions of others. Feel free to share with us your views and recommendations regarding the mods your personal experimentation.

These boards may be used for commercial endeavors in any quantity unless expressly noted. No attribution is necessary, though accreditation or a link back is always much appreciated.

If you are a builder planning to make your own run of pedals, we also offer the service of custom-made boards with your brand and logo, design according to your specifications.

The only usage restrictions are that, first, you cannot resell the PCB as part of a kit without prior arrangement with us, and second, you cannot scratch off the silkscreen or other way of trying to hide our logos and the source of the PCBs. Like it's written above, if you want to have your designs with your brand and logo, we could undoubtedly reach an agreement.

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