Dr. Trebor

Based on:
Aclam Dr. Robert
Effect type:
Clasic Preamp
Build difficult:
Advanced

Number of parts:
High, total 151 components
Technology:
Monolithic, bipolar, switched-capacitor voltage converter and regulator + transistor bipolar NPN
Power consumption:
9V

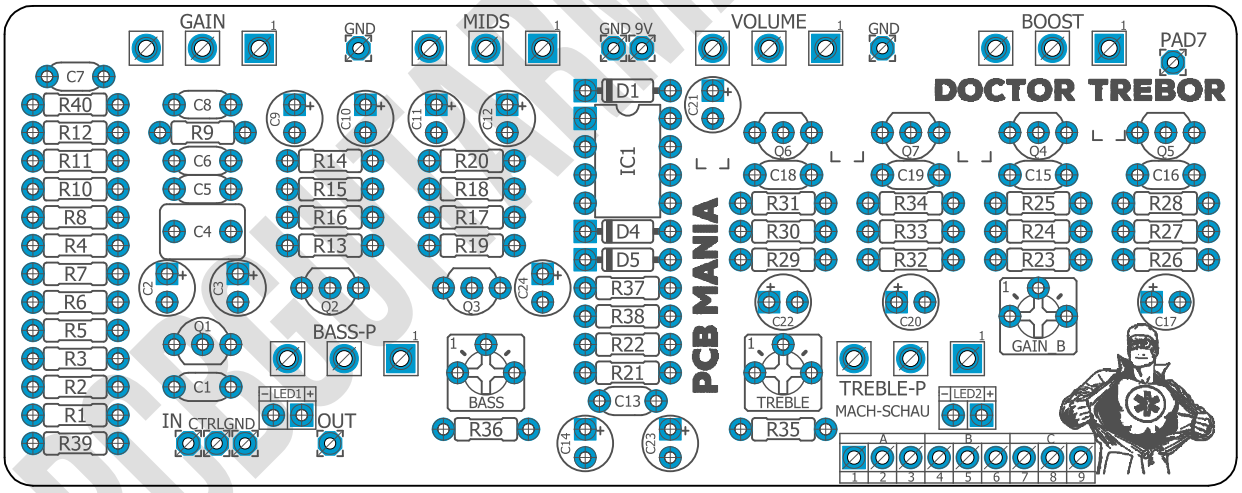
Enclosure type:
1590bb
Get your board at:
Dr. Trebor
Get your kit at:
Das Musikding (Europe)

Project overview:

Introducing Dr. Trebor, the affordable way to experience the Vox UL730 Amplifier!

I don't know about you, but I've never got the chance to try the real thing, and I probably could never afford one. That's a pity because the Legendary Vox UL 730 can be heard beautifully used by the Beatles, Rolling Stones, The Who, Jimmy Page, and many other legends.

The solution? It's called Dr. Trebor, an uncanny replica of the original that ensures great sound quality at an unbeatable price.



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Introduction

Since I was young, I've been captivated by the Beatles' dreamy guitar sounds. Just listen to Revolver, Sgt. Pepper's and Magical Mystery Tour, and you will know exactly what I'm talking about.

The liable for those unique sounds? A series of Vox Amps' hybrids and solid-state models that were used not only by the Beatles but also by many other superstars at the time.

You may say I'm a dreamer, but I'm not the only one, because many like me would love to have one of those amazing amps in their hands at all costs! Well, that may be an exaggeration if we consider that the originals can go over €12,000.

"Don't let me down," you may be thinking at this point, and don't worry, I won't because here comes the sun:

It turns out that some very driving people at Aclam Guitars, Barcelona, encountered one of these rare amps and spent the best part of a year recasting its magic into a pedal which they appropriately called Dr. Robert. It's a lot of fun, very authentic sounding that makes you twist and shout just by hearing it!

Inspired by that amazing pedal, our Dr. Trebor also encapsulates the shared sonic attributes of the Vox amps of that period. You can nail all those acclaimed tones with a simple but effective control set. Just connect the pedal and enjoy while your guitar gently weeps.

The board is as unique as the amp it's inspired. On the UL730, Vox separated the midrange control from the rest of the EQ stack, situating it before the volume pot and upstream from the bass and treble controls. Dr. Trebor's guts are wired similarly, which means that the midrange shapes the pedal's tone and gain profile profoundly before interacting with an amplifier's bass/treble tone stack.

So, what are you waiting for? Now is your time to take a sad song and make it better. And remember, "all you need is love," but if you also have an affordable Vox UL730 Amplifier in a box, much better!

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Controls

Potentiometers

- Bass
- Bass-P
- Gain-B
- Treble
- Treble-P

Switches

- Mach-Schau

Bill of materials

Resistors	
Part	**Value**
R1	33k
R2	27k
R3	100k
R4	10k
R5	348k
R6	22k
R7	3k3
R8	18k
R9	10k
R10	18k
R11	47k
R12	10k
R13	12k
R14	220k
R15	27k
R16	33k
R17	1k5
R18	470r
R19	220r
R20	150r
R21	1k
R22	4k7
R23	1m
R24	1m
R25	10r
R26	5m1
R27	68k
R28	27k
R29	1m
R30	1m
R31	15k
R32	5m1
R33	57k
R34	36k
R35	4k7
R36	4k7
R37	10k
R38	10k
R39	1m
R40	1k5

Capacitors	
Part	**Value**
C1	22n
C4	1u
C5	22n
C6	47n
C7	22n
C8	3n9
C13	22n
C15	820p
C16	8n2
C18	10n
C19	33n

Electrolytic Capacitors	
Part	**Value**
C2	10u
C3	47u
C9	10u
C10	10u
C11	100u
C12	10u
C14	2u2
C17	10u
C20	10u
C21	10u
C22	100u
C23	10u
C24	10u

Potentiometers	
Part	**Value**

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BOOST	500K A
GAIN	250K A
MIDS	25K A
VOLUME	500K A

Trimpots	
Part	**Value**
BASS*	200K
BASS-P	1K
GAIN_B	1K
TREBLE*	5K
TREBLE-P	1K

IC	
Part	**Value**
IC1	LT1054

Transistors	
Part	**Value**
Q1	2n2222s
Q2	2n2222s
Q3	2n2222s
Q4	2N5457
Q5	2N5457
Q6	2N5457
Q7	2N5457

Switches	
Part	**Value**
MACH-SCHAU	3PDT On/On
-	3PDT Stomp foot

Diodes	
Part	**Value**
D1	1n5817
D4	1n5817
D5	1n5817
LED1**	3mm red LED
LED2	3mm red LED

Jacks	
Part	**Value**
-	DC JACK
-	AUDIO JACK
-	AUDIO JACK

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Shopping list

Resistors		
Qty	**Value**	**Parts**
1	100k	R3
5	10k	R4, R9, R12, R37, R38
1	10r	R25
1	12k	R13
1	150r	R20
1	15k	R31
2	18k	R8, R10
1	1k	R21
2	1k5	R17, R40
5	1m	R23, R24, R29, R30, R39
1	220k	R14
1	220r	R19
1	22k	R6
3	27k	R2, R15, R28
2	33k	R1, R16
1	348k	R5
1	36k	R34
1	3k3	R7
1	470r	R18
1	47k	R11
3	4k7	R22, R35, R36
1	57k	R33
2	5m1	R26, R32
1	68k	R27

Capacitors		
Qty	**Value**	**Parts**
1	10n	C18
1	1u	C4
4	22n	C1, C5, C7, C13
1	33n	C19
1	3n9	C8
1	47n	C6
1	820p	C15
1	8n2	C16

Electrolytic Capacitors		
Qty	**Value**	**Parts**
2	100u	C11, C22
9	10u	C2, C9, C10, C12, C17, C20, C21, C23, C24
1	2u2	C14
1	47u	C3

Potentiometers		
Qty	**Value**	**Parts**
1	250K A	GAIN
1	25K A	MIDS
2	500K A	VOLUME, BOOST

Trimpots		
Qty	**Value**	**Parts**
3	1K	GAIN_B, BASS-P, TREBLE-P
1	200K	**BASS***
1	5K	**TREBLE***

IC		
Qty	**Value**	**Parts**
1	LT1054	IC1

Transistors		
Qty	**Value**	**Parts**
3	2n2222s	Q1, Q2, Q3
4	2N5457	Q4, Q5, Q6, Q7

Switches		
Qty	**Value**	**Parts**
1	3PDT On/On	MACH-SCHAU
1	3PDT Stomp foot	-

Diodes		
Qty	**Value**	**Parts**
3	1n5817	D1, D4, D5
2	3mm red LED	**LED1****, LED2

Jacks		
Qty	**Value**	**Parts**
1	DC JACK	-
2	AUDIO JACK	-

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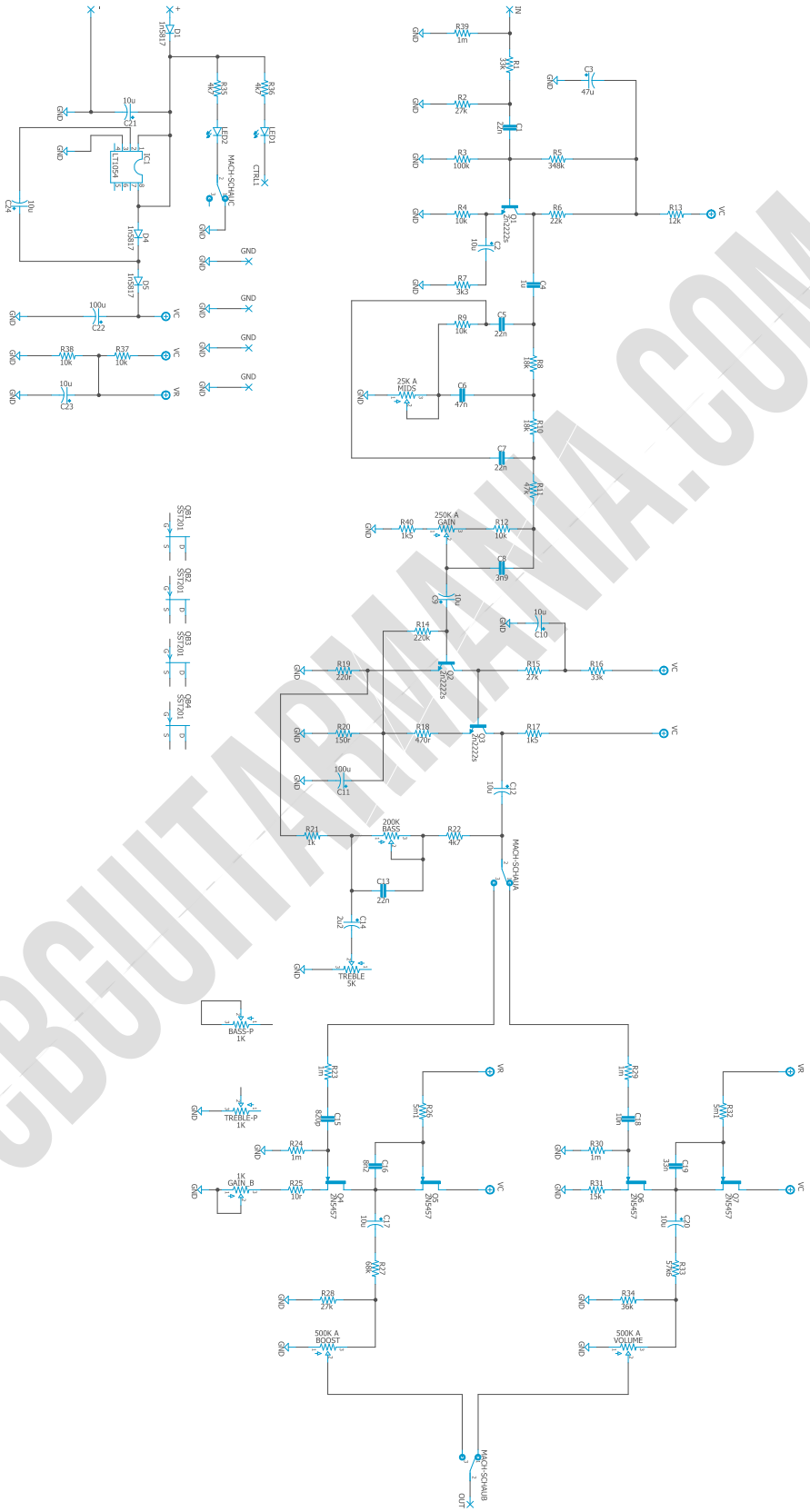
Schematic



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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

External Bass/Treble Pot Mod*
The original version of this board uses trimpots for Bass and Treble controls. I added the option for external potentiometers instead.

Just replace the original trimpots for the following external potentiometers:

Potentiometers	
Part	**Value**
BASS	200K C
TREBLE	5K B

LED1**
The circuit for LED1 is inverted. To make it behave correctly, exchange the wires Sw 7 and 9; otherwise, LED will be ON when Boost is OFF.

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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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