

# Hatto

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## Bill of materials

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Resistors	
Part	Value
R1	1M
R2	10K
R3	1M
R4	1K
R5	5.1K
R6	9.1K
R7	13K
R8	20K
R9	30K
R10	9.1K
R11	13K
R12	20K
R13	30K
R14	5.1K
R15	1K
R16	1K
R17	1K
R18	100k
R19	100k
R20	100R
R21	4K7
R22	4K7
R23	10K
R24	10K
R25	10K
R26	10K
R27	10K
R28	10K
R29	10K
R30	1K
R31	1K
R32	1K
R33	4K7
R34	1K

R35****	1K
R36	10K
R37	100R
R38	100K
R39	100K
R40	10K
R41	10K
R42	10K
R43	10K
R44	100R
R45	100R
RLED	4K7

Capacitors	
Part	Value
C1	100n
C2	22n
C3	22n
C4	1u
C6	100n
C10	100n
C11	100n
C13	100n
C15	100n
C16	100n
C17	100n
C19	100n
C21	100n

Electrolytics Capacitors	
Part	Value
C5	100u
C7	10u
C8	10u
C9	10u

C18	100u
C20	47u

Potentiometers	
Part	Value
DEPTH	B10K
DIST	B10K
LEVEL	A500K
MULTI	B10K
OFFSET	B25K
TEMPO	B10K
Trim pots	
Part	Value
GAIN	100K
HIGH	5K
LED	10K
LOW	5K

IC	
Part	Value
IC1	TL074
IC2	<a href="#">TAPLFO3*</a>
IC3	TL072

Switches	
Part	Value

SW1	DIP 4PDT***
SW2	DIP 4PDT***
Footswitch	SPDT momentary
Waveform	Rotary 1P8T
Behave	Rotary 2P4T
Bank	On-On

Regulators	
Part	Value
Reg1	L78L05
Reg2	L78L05

Photocoupler	
Part	Value
VACT_1	VTL5C2**
VACT_2	VTL5C2**

Diodes	
Part	Value
D1	1N5817
D2	3mm red LED
D5	3mm red LED
D6	3mm red LED

# Shopping list

Resistors		
Qty	Value	Parts
2	100K	R38, R39
4	100R	R20, R37, R44, R45
2	100k	R18, R19
13	10K	R2, R23, R24, R25, R26, R27, R28, R29, R36, R40, R41, R42, R43
2	13K	R7, R11
9	1K	R4, R15, R16, R17, R30, R31, R32, R34, R35****
2	1M	R1, R3
2	20K	R8, R12
2	30K	R9, R13
4	4K7	R21, R22, R33, RLED
2	5.1K	R5, R14
2	9.1K	R6, R10

Capacitors		
Qty	Value	Parts
10	100n	C1, C6, C10, C11, C13, C15, C16, C17, C19, C21
1	1u	C4
2	22n	C2, C3

Electrolytics Capacitors		
Qty	Value	Parts
1	100u	C18
1	100u	C5
3	10u	C7, C8, C9
1	47u	C20

Potentiometers		
Qty	Value	Parts
1	A500K	LEVEL
4	B10K	DEPTH, DIST, MULTI, TEMPO
1	B25K	OFFSET

Trim pots		
Qty	Value	Parts
1	100K	GAIN
1	10K	LED
2	5K	HIGH, LOW

IC		
Qty	Value	Parts
1	TAPLFO3*	IC2
1	TL072	IC3
1	TL074	IC1

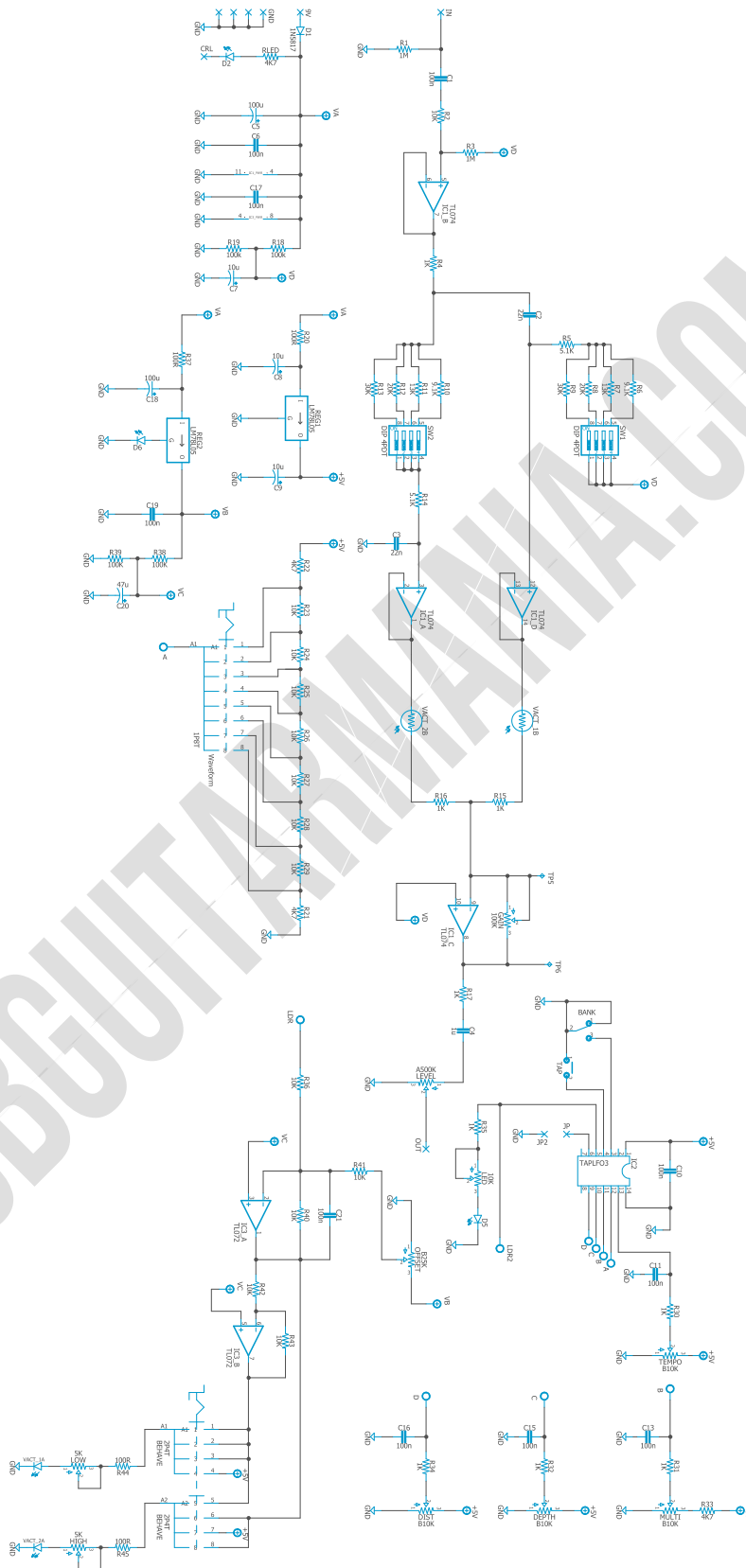
Switches		
Qty	Value	Parts
2	DIP 4PDT***	SW1, SW2
1	SPDT momentary	Footswitch
1	Rotary 1P8T	Waveform
1	Rotary 2P4T	Behave
1	On-On	Bank

Regulators		
Qty	Value	Parts
2	L78L05	Reg1, Reg2

Diodes		
Qty	Value	Parts
1	1N5817	D1
3	3mm red LED	D2, D5, D6

Photocoupler		
Qty	Value	Parts
2	VTL5C2**	VACT_1, VACT_2

# Schematic



# Components Recommendations

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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

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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

### TAPLFO3\*

You can find this IC in [Electric Druid components](#).

### VTL5C2\*\*

Instead of the vactrol, you can place a photoresist + 5mm yellow LED diffused.

### DIP 4PDT\*\*\*



### R35\*\*\*\*

A 90-100ohm resistor is better suited for diffused LEDs.

## Wiring Diagram

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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

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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

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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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