

DR. PHIL V1.1A

Compressor with a little Extra!

OVERVIEW

This is a well known circuit which features a versatile compressor together with a nice dirt section.

GENERAL

The optical compressor circuit can be blended in with the original signal. The compressed signal can additionally be blended with its overdriven signal.

SOME WORDS ABOUT THE CONTROLS:

There are mixed reactions when people are confronted with so many controls in a compressor circuit. Furthermore these controls are not really what you expect when thinking about a compressor.

Volume: controls the level of the output signal. Works like attenuation. 100% will match the input signal level. (You might want to use 22k or more for R10 to be able to amplify the signal.

Treble: This is a basic treble cut reducing the highs in the overall signal.

Sustain: This is the amount of compression applied to the signal.

Grit: This is a blend control which blends between the compressed clean signal and the compressed distorted signal.

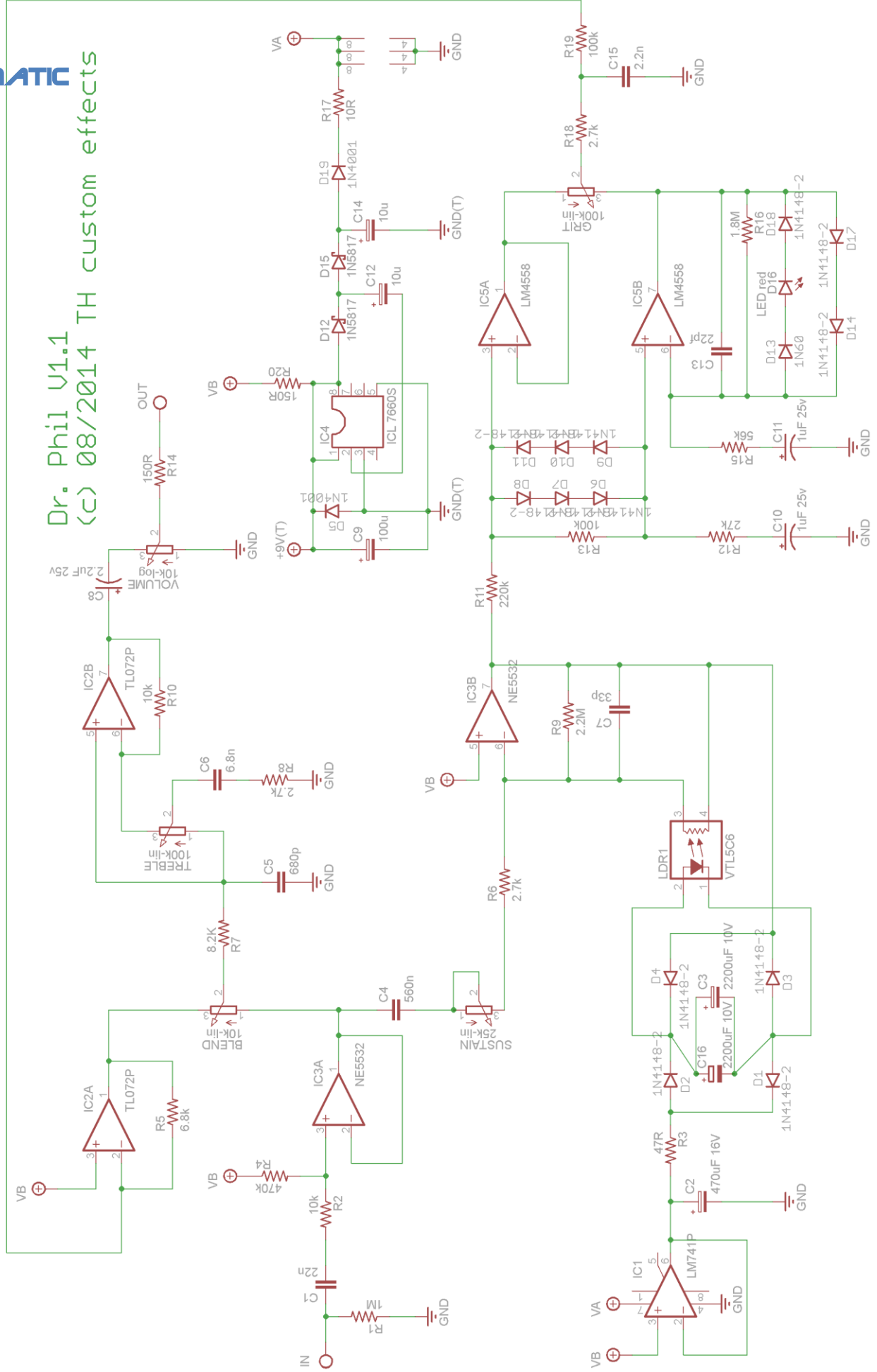
Blend: This blends between the clean uncompressed and the compressed signal (which might have distortion applied by using the Grit control.

What needs to be understood is that using lots of "Sustain" will compress (remove) any "ummph" from the low end. You need to use "Sustain" and "Blend" together to mix your favourite tone!

One of the settings I like most is to use almost full Sustain and mixing only a little clean signal into it. This will raise the level of the higher strings AND provide some clear attack on the lower end.

SCHEMATIC

Dr. Phil V1.1
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BILL OF MATERIALS

	Device#	Qty	Value	Comment
Resistors	R1	1	1M	
	R2, R10	2	10k	
	R3	1	47R	
	R4	1	470k	
	R5	1	6k8	
	R6, R8, R18	3	2k7	
	R7	1	8k2	
	R9	1	2M2	
	R11	1	220k	
	R12	1	27k	
	R13, R19	2	100k	
	R14, R20	1	150R	
	R15	1	56k	
	R16	1	1M8	
	R17	1	10R	
Capacitors	C1	1	22n	box film
	C2	1	470u/16V	polarized electro
	C3/C16	1	2200uF/10V	polarized electro – see build notes
	C4	1	560n	box film
	C5	1	680p	ceram
	C6	1	6n8	box film
	C7	1	33p	ceram
	C8	1	2u2 / 25V	polarized electro
	C9	1	100u/16V	polarized electro
	C10, C11	2	1u/25V	polarized electro
	C12, C14	2	10u/25V	polarized electro
	C13	1	22p	ceram
	C15	1	2n2	box film
Pots	BLEND	1	10k-lin	9mm Alpha standing
	SUSTAIN	1	25k-lin	9mm Alpha standing
	TREBLE, GRIT	2	100k-lin	9mm Alpha standing
	VOLUME	1	10k-log	9mm Alpha standing
Diodes	D1-D4, D6-D11, D14, D17, D18	13	1N4148	
	D5, D19	2	1N4001	
	D12, D15	2	1N5817	
	D13	1	1N60	
	D16	1	LED 5mm red	
Other	LDR1	1	VTL 5C6	Optocoupler
ICs	IC1	1	LM741	
	IC2	1	TL072	
	IC3	1	NE5532	
	IC4	1	ICL 7660SCPA	
	IC5	1	LM4558	

BUILDING

There are a lot of parts, so take your time and everything will work out well.

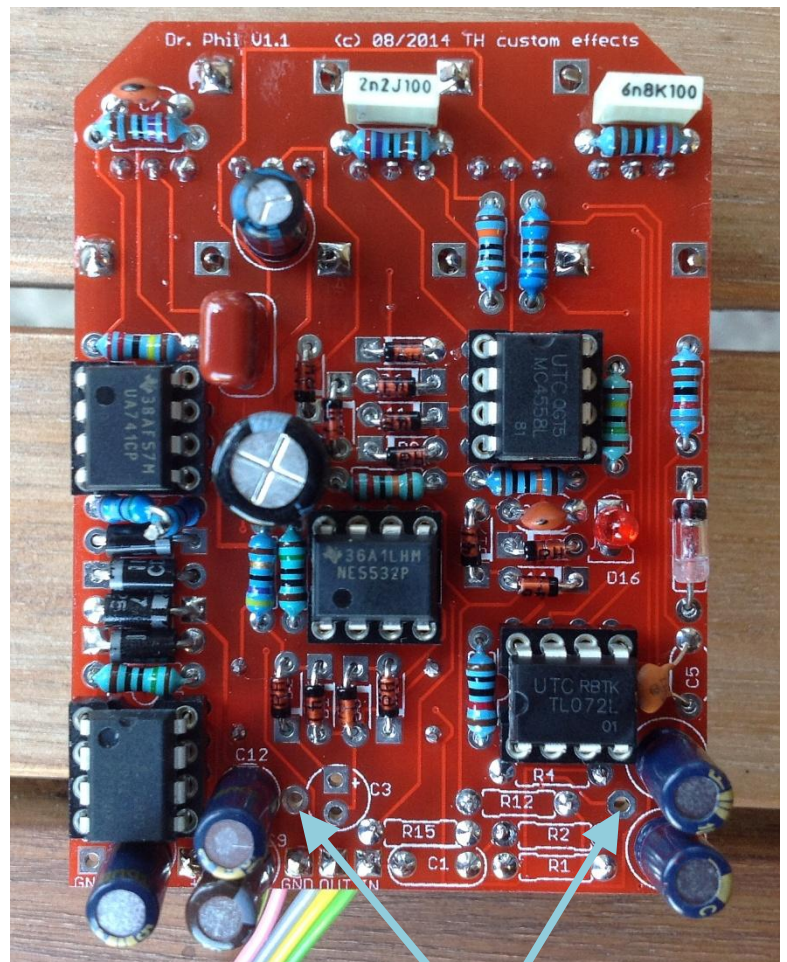
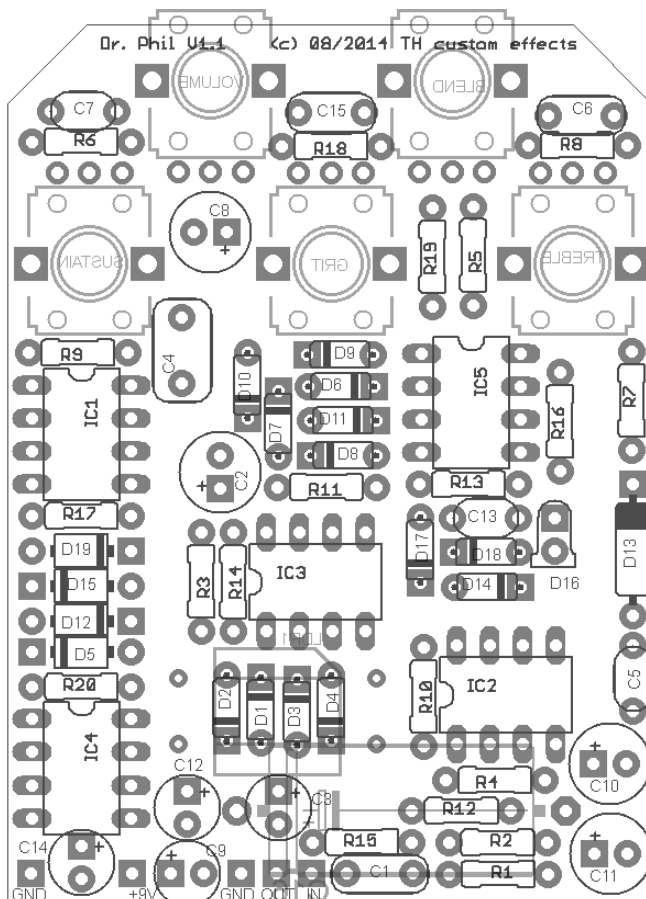
If you managed to get a 2200uF/10V cap that is max 13mm in diameter you can mount it on top of the board. To do so it makes sense to place the following components onto the backside of the board: R1,R2,R4,R12,R15,C1.

Please see the detail pictures to get an idea.

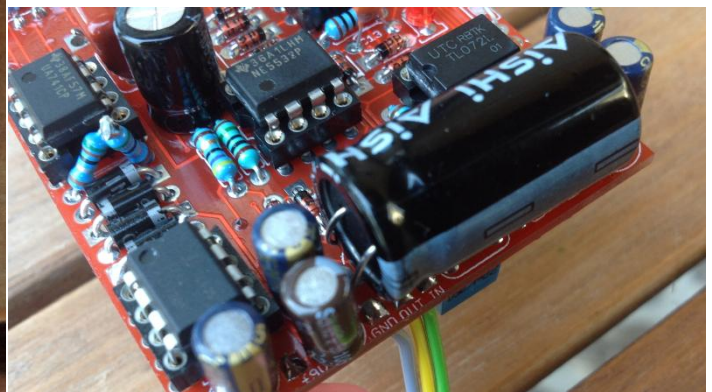
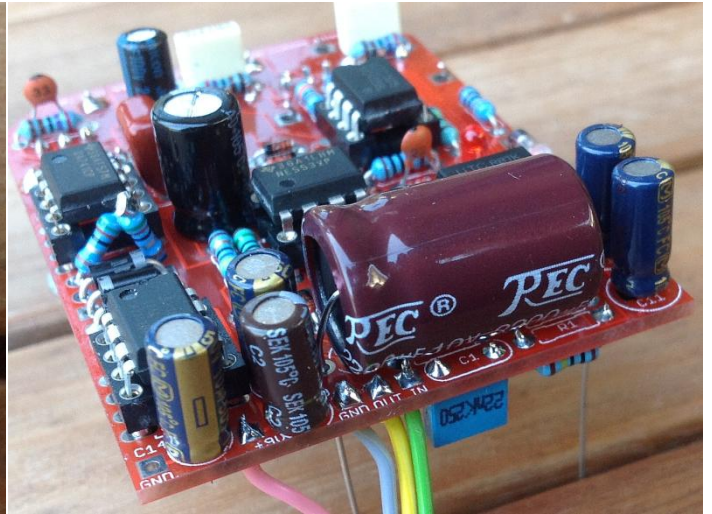
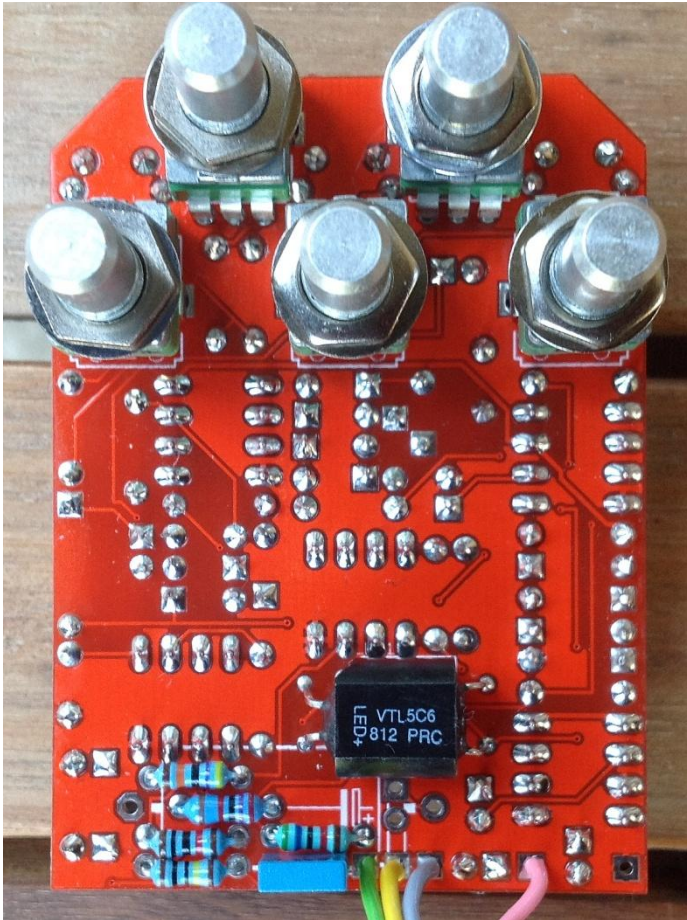
Start populating resistors and diodes first. This includes the backside mounted resistors. Then IC sockets. Next do the capacitors, starting ceramic and box film and last pol. electros. The Optocoupler goes to the backside of the PCB. Also mount C1 now.

Then mount C3/C16. If you have an axial type you will use the holes of C16 – see silkscreen on the back. A radial type will fit the holes of C3 but you will need to bend it lying flat at the end.

The pots are last.



axial cap holes (c16)



ENCLOSURE

This fits a 1590B enclosure.

Drill template to follow.

FINALLY

You have built a very nice circuit which is more than just a compressor. It will need some time to figure out the controls but you will be rewarded with great sound!

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