Engel Pre-amp

Based on:
Engl 530 Preamp

Number of parts:
High, total 71 components

Enclosure type:
125b

Effect type:
High gain preamp

Technology:
Opamp

Get your board at:
Engel Preamp

Build difficult:
Average

Power consumption:
9V

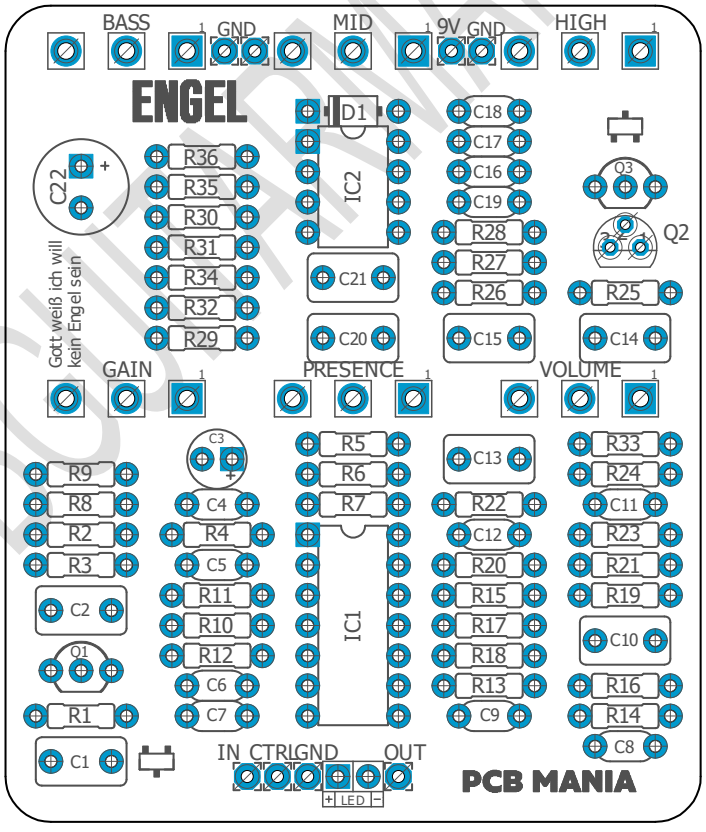
Get your kit at:
Das Musikding (Europe)

Project overview:

Engl is undoubtedly a synonym of an era of German metal tones. Here we bring that to you in a shape of a pedal!

An original design by Bajaman based on the frequency response and phase characteristics of the ENGL 530 preamp high gain channel. Including Tone stack and presence control.

We have included an extra **gain mod** if you want to take more juice out of this machine!



Index

Introduction

Engl is a German company most famous for its high gain amps that you can definitely hear on many German metal bands. They designed the e530 tube preamp as a compact rack suitable for both studio and touring, including many exciting features, such as a built-in cab simulator, midi controls, and more.

Besides being labeled as 'modern rock', this model is clearly a preamp designed for metal and for sure can deliver plenty of gain! This unit is designed to make the rhythms pop out with definition - but if you want to get some real squeeze for soloing, I recommend sticking a pedal like the Collision drive in front. In fact, that's what seemed to work best for leads - once the unit's been set up for rhythm, stomp on the overdrive and let rip.

After testing this pedal for a while, we can conclude that even if it could work fine as a preamp on itself, it works the best as a standard Engl flavored pedal. Making it much more friendly for your pedalboard, allowing you to place it in different places of the chain.

One important note about this circuit is that the Presence knob could get a bit noisy and fizzy outside the enclosure. However, the problem seems to be solved once it is boxed.

Controls

Potentiometers

- Volume
- Gain
- Bass
- Treble
- Mids
- Presence

Bill of materials

Resistors	
Part	**Value**
R1	1M5
R2	1M
R3	10K
R4	1M
R5	820r
R6	**1K5***
R7	**8K2***
R8	22K
R9	10K
R10	560r
R11	47K
R12	**2K7***
R13	10K
R14	22K
R15	22K
R16	47K
R17	560r
R18	2K7
R19	10K
R20	15K
R21	47K
R22	2K7
R23	560r
R24	2K2
R25	1M
R26	10K
R27	100K
R28	100K
R29	1M
R30	1K
R31	4K7
R32	1M
R33	1K
R34	4K7
R35	10K
R36	10K

Capacitors	
Part	**Value**
C1	1u
C2	1u
C4	15n
C5	120p
C6	**3n3***
C7	15n
C8	470p
C9	22n
C10	1u
C11	390p
C12	10n
C13	1u
C14	1u
C15	1u
C16	470p
C17	22n
C18	22n
C19	1n
C20	1u
C21	1u

Electrolytic Capacitors	
Part	**Value**
C3	22u
C22	220u

Potentiometers	
Part	**Value**
BASS	A1M
GAIN	B100K
HIGH	B250K
MID	B20K
PRESENCE	**B250K****
VOLUME	B100K

IC	
Part	**Value**
IC1	TL064
IC2	TL061

Transistors	
Part	**Value**
Q1	J201
Q2	BC547B
Q3	J201

Diodes	
Part	**Value**
D1	1N5817
LED	3mm LED

Shopping list

Resistors		
Qty	**Value**	**Parts**
2	100K	R27, R28
7	10K	R3, R9, R13, R19, R26, R35, R36
1	15K	R20
2	1K	R30, R33
1	1K5	**R6***
5	1M	R2, R4, R25, R29, R32
1	1M5	R1
3	22K	R8, R14, R15
1	2K2	R24
3	2K7	**R12***, R18, R22
3	47K	R11, R16, R21
2	4K7	R31, R34
3	560r	R10, R17, R23
1	820r	R5
1	8K2	**R7***

Capacitors		
Qty	**Value**	**Parts**
1	10n	C12
1	120p	C5
2	15n	C4, C7
1	1n	C19
8	1u	C1, C2, C10, C13, C14, C15, C20, C21
3	22n	C9, C17, C18
1	390p	C11
1	3n3	C6
2	470p	C8, C16

Electrolytic Capacitors		
Qty	**Value**	**Parts**
1	22u	C3
1	220u	C22

Potentiometers		
Qty	**Value**	**Parts**
1	A1M	BASS
2	B100K	GAIN, VOLUME
1	B20K	MID
2	B250K	HIGH, **PRESENCE****

IC		
Qty	**Value**	**Parts**
1	TL061	IC2
1	TL064	IC1

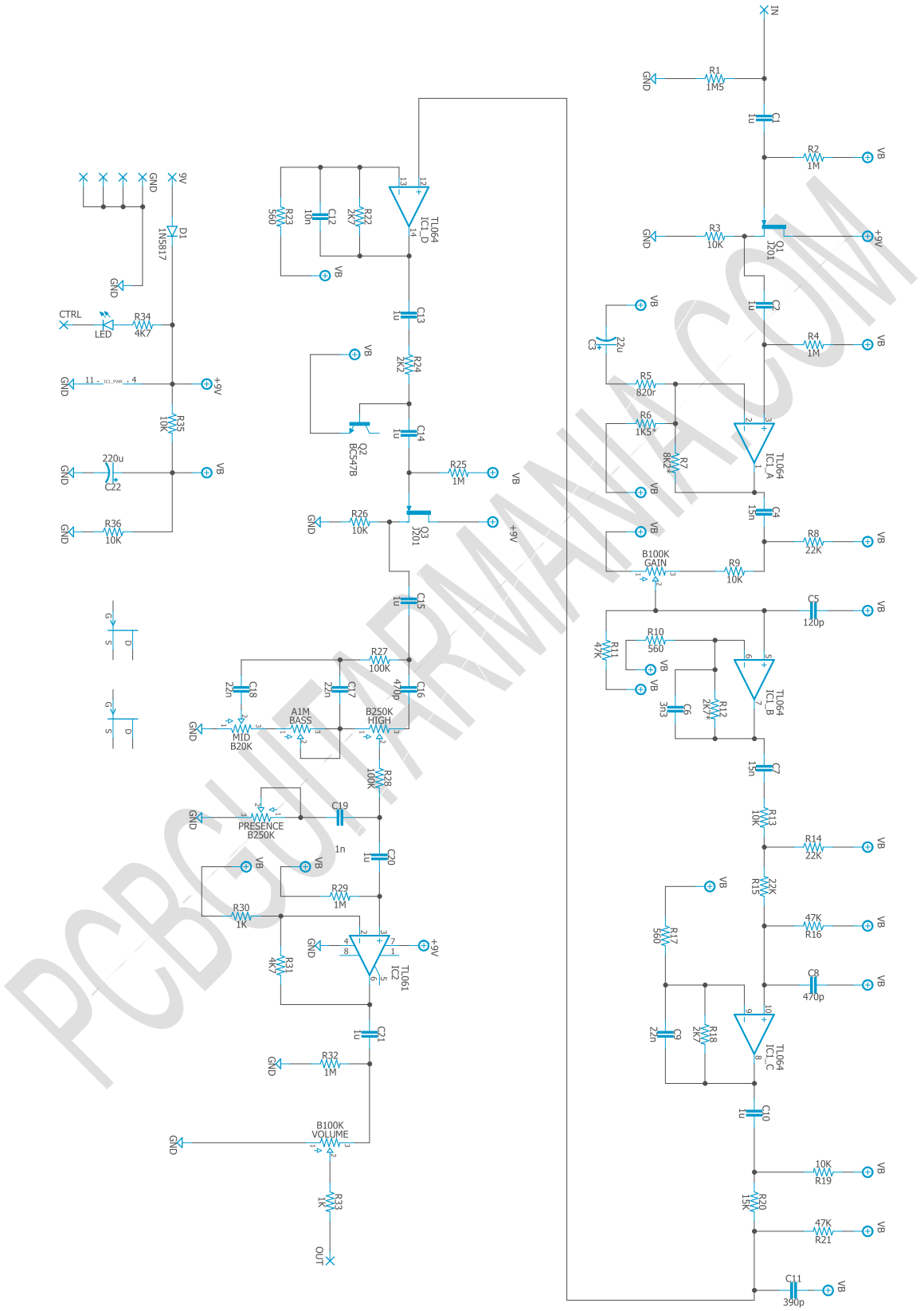
Transistors		
Qty	**Value**	**Parts**
1	BC547B	Q2
2	J201	Q1, Q3

Diodes		
Qty	**Value**	**Parts**
1	1N5817	D1
1	3mm LED	LED

Switches		
Qty	**Value**	**Parts**
1	3PDT Stomp foot	-

Jacks		
Qty	**Value**	**Parts**
1	DC Jack	-
2	Audio Jacks	-

Schematic



Components Recommendations

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

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

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

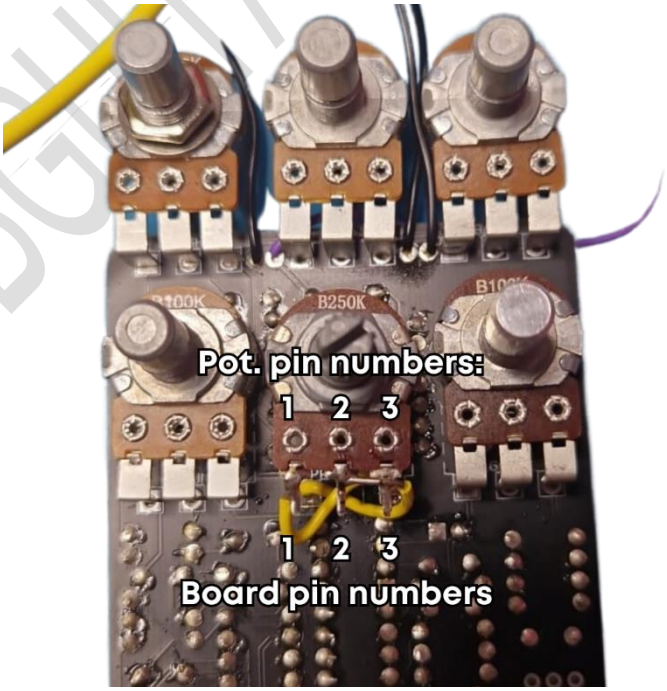
High gain Mod*

Use the following values to get more gain out of this unit.

Part	Value
R7*	15k
R12*	6k8
C6*	1n5

PRESENCE**

Originally Presence had a value of A1M but we replaced it for a B250K. A1M added too much treble moving the result away from the original Engel Preamp.
In order to make Presence work properly you will need to make the following adjustments: From pin 1 of the board, connect a jumper to pins 2 and 3 of the potentiometer. From pin 3 of the board, connect a jumper to pin 1 of the potentiometer. The pin 2 of the potentiometer should not be connected to the PCB. Use the following images as a guide.



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 125b 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.

Follow us on Instagram and Facebook to stay in tune with the latest projects!