

# Benzin VH4 SMD

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**Based on:**

Diezel VH4 Pedal

**Effect type:**

High Gain Pre-amp

**Build difficult:**

Easy

**Amount of parts:**

Average, total 34 components

**Technology:**

Dual Op-Amp gain stages

**Power consumption:**

12-18v

**Enclosure type:**

1590bb

**Get your board at:**

[Benzin VH4 SMD](#)

**Get your kit at:**

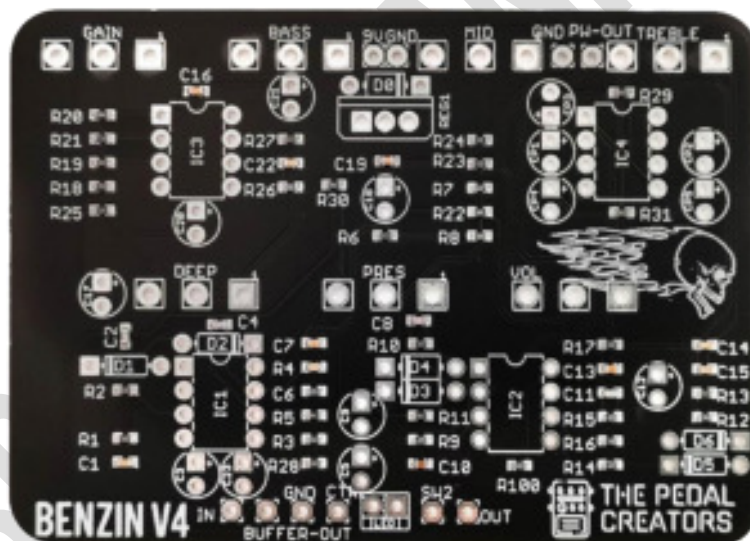
[Das Musikding \(Europe\)](#)

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**Project overview:**

Based on the formidable high-gain tone of the VH4 tube amplifier, the Benzin VH4 Pedal delivers all the high-intensity distortion you can handle. Specifically based on the VH4's Mega channel, the VH4 Pedal starts with wide-ranging controls for Gain, Treble, Middle, and Bass.

Essentially, the Benzin VH4 Pedal puts one of the most revered metal amp channels on your pedal board.



# About The Pedal Creators

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**Everyone can build** excellent boutique guitar **pedals**.

Everything **we do** is to make that **experience** more accessible and **user-friendlier**.

The **Pedal Creators** series are the **best and easiest to build PCBs** ever. Including most **resistors** and **capacitors** already **soldered** on board as SMD components, leaving the key values for you to **experiment** and craft **your own tone**.

Now you can **build** a pedal you are **proud** of in **less than an hour** without any previous experience.

What are you waiting for to **become a Pedal Creator**?

## The Pedal creators - key features:

- **Easy to build**, no previous experience required. It's like Lego for musicians.
- **Fast assembly** finish a pedal in less than an hour. Play your favorite record and enjoy the ride along.
- **100% mistake-proof**. Even my grandma can build one while she cooks.
- **Build** your own boutique pedal. Experiment with different values and make the **pedal you always dreamed of**.
- Easy to scale. **Turn your passion into a money-making machine**.

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# Introduction

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Unlike traditional overdrive stomp boxes, the VH4 Pedal is a true preamp that delivers an authentic representation of its namesake – real Diezel tone – not emulated, not modeled, but sincerely reproduced. The entire signal architecture is faithful to the original: Bass, Mid, Treble, and variable Deep and Presence controls allow you to tailor the uniquely Diezel Overdrive character. The command found in the Gain control gives a player everything they will ever need with lower gain settings producing the classic Diezel sparkle and chime to saturated mid-gain sounds, to scorching Diezel leads by cranking it all the way up.

As close to the original VH4 preamp, the VH4 pedal can be used as either an overdrive or as a standalone preamp to feed into your amps power section. What players take away by going direct into the power amp is all the dynamic, unfiltered Diezel tone by simply plugging into your amplifier's clean channel. Two outputs are provided with the first intended to connect to the front of a guitar amplifier and the second allows for a connection to a line-level power amp or power section of your amp via the Effects Return.

## Controls

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- Volume
- Gain
- Bass
- Middle
- Treble
- Presence: The Presence control helps you find just the right amount of bite to cut through a mix without making your signal too harsh.
- Depth: (resonance) control. Active in the final output stage of the pedal, the Deep knob allows you to fine-tune your tone's low-end punch in a way you can't achieve with traditional EQ or tone controls.
- Two outputs to connect to the front of a guitar amplifier or for a connection to a line-level power amp or power section of your amp via the Effects Return

# Bill of materials

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Electrolytic Capacitors	
Part	Value
C3	1u
C5	1u
C9	2u2
C12	2u2
C17	10u
C18	10u
C20	2u2
C21	1u
C23	1u
CP1	47u
CP2	47u
CP3	47u
CP4	47u
CP5	47u

Potentiometers	
Part	Value
TREBLE	250K B
VOL	10K A
DEEP	25K C

GAIN	250K A
MID	25K B
PRES	25K C
BASS	1M A

Diodes	
Part	Value
D0	1n5817
D1	1n4148
D2	1n4148
D3	1n5232
D4	1n5232
D5	1n4148
D6	1n4148
LED	3mm LED

IC	
Part	Value
IC1	OPA2134**
IC2	TL072CP
IC3	TL072CP
IC4	TC1044SCPA*
REG1	LM2940CT-12

# Shopping list

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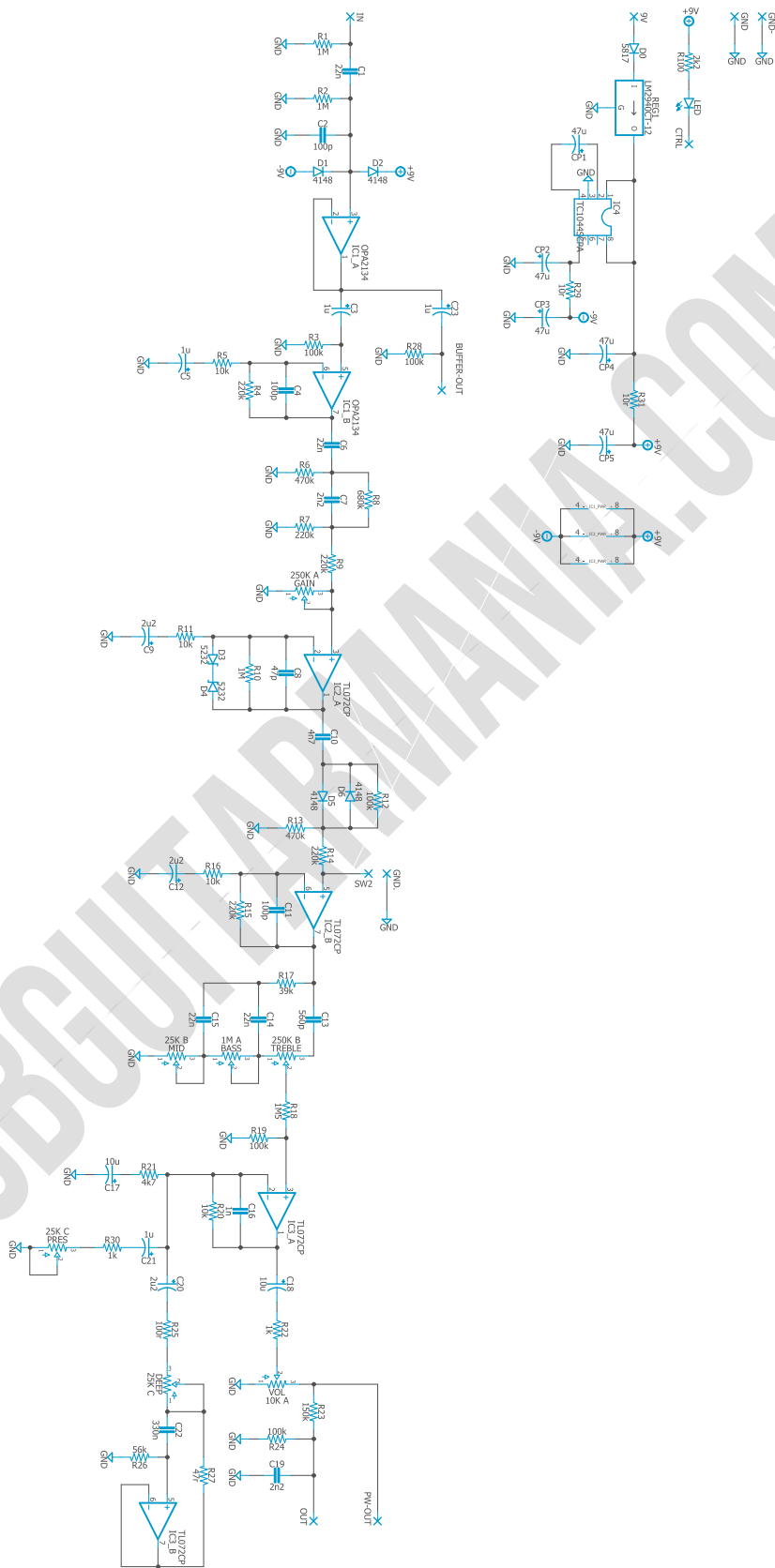
Electrolytic Capacitors		
Qty	Value	Device
2	10u	C17, C18
4	1u	C3, C5, C21, C23
3	2u2	C9, C12, C20
5	47u	CP1, CP2, CP3, CP4, CP5

Potentiometers		
Qty	Value	Device
1	250K B	TREBLE
1	10K A	VOL
1	1M A	BASS
1	25K B	MID
2	25K C	DEEP, PRES
1	250K A	GAIN

IC		
Qty	Value	Device
1	OPA2134	IC1
2	TL072CP	IC2, IC3
1	TC1044SCPA	IC4
1	LM2940CT-12	REG1

Diodes		
Qty	Value	Device
1	1n5817	D0
4	1n4148	D1, D2, D5, D6
2	1n5232	D3, D4
1	3mm LED	LED

# 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. Electrolytic capacitors (always check the polarity)
2. Transistors
3. Wires
4. Potentiometers and switches
5. Off-board wiring

**TC1044SCPA\*** is an upgrade over the 7660s present on the original Diezel.

**OPA2134\*\*** is a high-quality audio grade Dual Op Amp. It's a bit pricey in contrast with a classic TL072 but totally worth for the right performance of this unit. Always ensure to get yours from a trusted supplier and be aware of counterfeits!

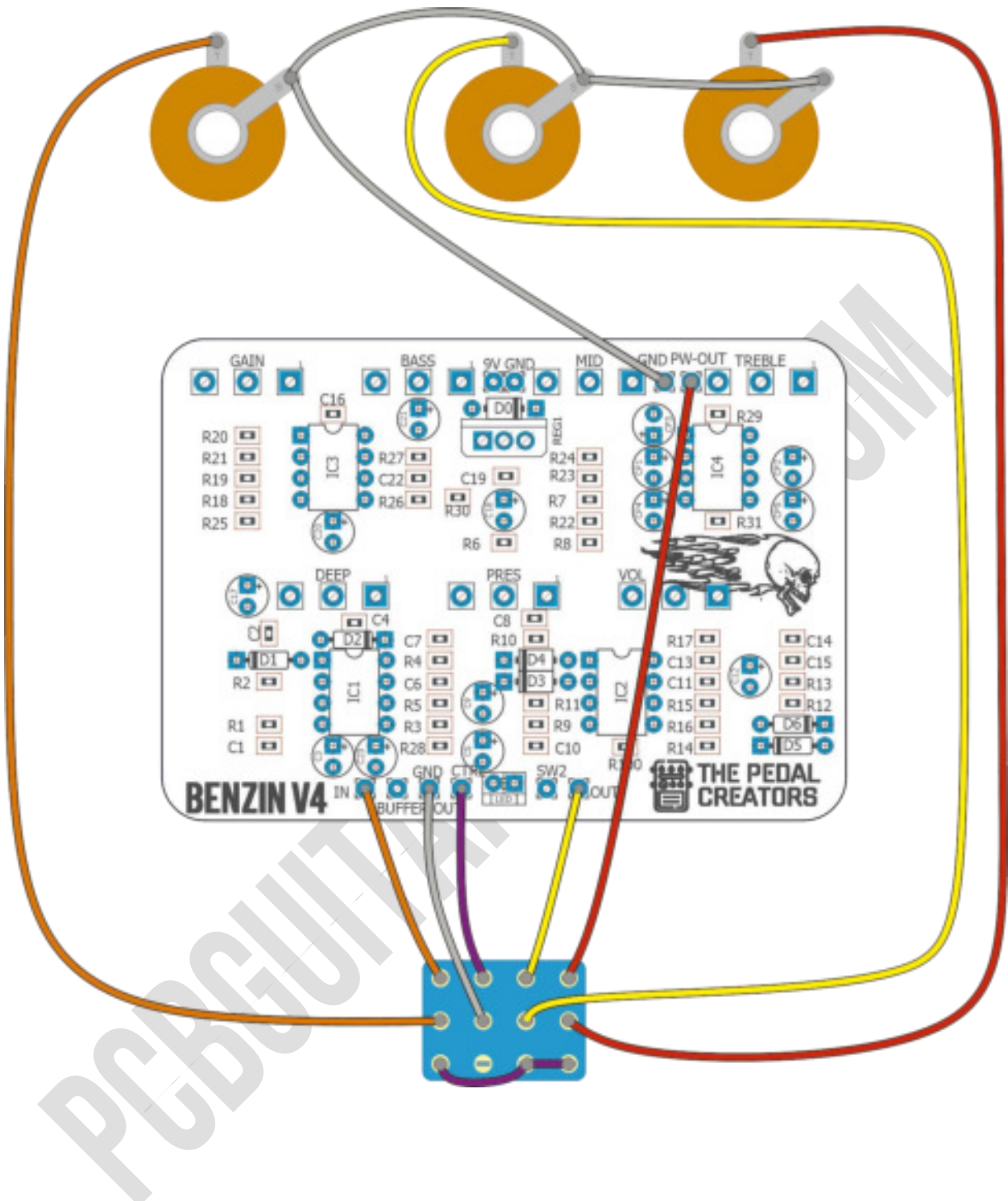
## Wiring Diagram

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All our projects include a free 3PDT Board to make the wiring easier and tidier. Also, all 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

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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.

Follow us on [Instagram](#) and [Facebook](#) to stay in tune with the latest projects!