

# Collision Drive

## Based on:

Horizon devices Precision drive

## Effect type:

High Gain Preamp

## Build difficult:

Average

## Amount of parts:

Average, total 58 components

## Technology:

Dual OpAmp.

## Power consumption:

9V(22mA)

## Enclosure type:

125b

## Get your board at:

[Collision Drive](#)

## Get your kit at:

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

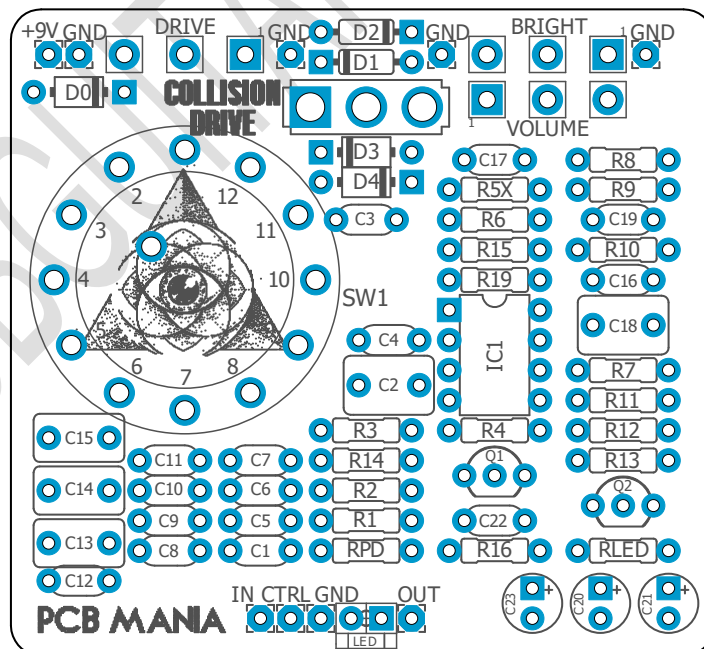
## Project overview:

The Collision Drive is an overdrive specially developed for metal players. Based on Misha Manssor's Precision Drive, this circuit has been perfectly designed to plug it in front of a high-gain amp, making the low-end tight and plenty of definition.

This board offers a variety of settings with the Attack rotary switch to get rid of unwanted mud in the low end as the one present on the Horizon devices version, but we have included 3 extra positions on the rotary to make your own custom settings by placing a custom value capacitor.

We have also included a toggle to select in between the stock diodes, no diodes, or a custom option of your choice, giving you total control of the compression and clipping of the drive.

**This version does not include the noise gate section.**



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## Introduction

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The Collision Drive is a modern, cutting-edge overdrive pedal. Tailored towards high-gain metal players looking to tighten up their sound, the Precision Drive is built specifically to be used in conjunction with super-hot amplifiers and digital modellers.

With roots on the Ibanez Tube Screamer as a starting point, the people of Horizon devices took care of modifying this all-time classic in order to make it perfect for the needs of the modern metal player and the extended range guitarist.

The Attack control manipulates the response of the pedal, increasing the Attack will give a more immediate punch, suited for fast palm-muted chords. For extended range 7 or 8 stringed guitars, this is a key addition.

The Bright control gives you even more flexibility. Adding presence to darker-sounding amps, the Bright knob delivers plenty of high-end sizzle. Taking away further low-end sag, this EQ control balances well together with the Attack.

## Controls

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- Gain
- Volume
- Bright
- Attack
- Diode Switch

# Bill of materials

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Resistors	
Part	Value
R1	1k
R2	510k
R3	10k
R4	10k
R5X	10k
R6	1k
R7	10k
R8	220R
R9	3k9
R10	1k
R11	510k
R12	10k
R13	100R
R14	10k
R15	10k
R16	10k
R19	1k
RLED	4k7
RPD	1m

Capacitors	
Part	Value
C1	27n
C2	1u
C3	47p
C4	custom
C5	custom
C6	custom
C7	120p
C8	33n
C9	47n
C10	68n
C11	82n
C12	100n
C13	220n
C14	330n
C15	470n
C16	220n
C17	220n
C18	1u
C19	100n
C20	10u
C21	100u
C22	100n
C23	47u

Semiconductors	
Part	Value
Q1	2N3904
Q2	2N3904
IC1	JRC4558D
LED	3mm Red LED
D0	1N5817
D1	1n4148
D2	1n4148
D3	custom
D4	custom

Potentiometers	
Part	Value
VOLUME	a100k
DRIVE	a500k
BRIGHT	b5k

Switches	
Part	Value
SPDT	On-off-on
SW1	1p12T

# Shopping list

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Resistors		
Qty	Value	Parts
8	10k	R3, R4, R5X, R7, R12, R14, R15, R16
4	1k	R1, R6, R10, R19
2	510k	R2, R11
1	100R	R13
1	220R	R8
1	3k9	R9
1	4k7	RLED
1	1m	RPD

Semiconductors		
Qty	Value	Parts
1	1N5817	D0
2	1n4148	D1, D2
2	custom	D3, D4
1	JRC4558D	IC1
2	2N3904	Q1, Q2

Switches		
Qty	Value	Parts
1	On-off-on	SPDT
1		SW1

Capacitors		
Qty	Value	Parts
3	100n	C12, C19, C22
3	custom	C4, C5, C6
2	220n	C16, C17
2	1u	C2, C18
1	27n	C1
1	68n	C10
1	82n	C11
1	220n	C13
1	330n	C14
1	470n	C15
1	10u	C20
1	100u	C21
1	47u	C23
1	47p	C3
1	120p	C7
1	33n	C8
1	47n	C9

Potentiometers		
Qty	Value	Parts
1	a100k	VOLUME
1	b5k	BRIGHT
1	a500k	DRIVE

# Components Recommendations

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As many people like to experiment 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 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 exclusively regarding this project. It doesn't include all the hardware like the 3PDT bypass switch, audio/dc jacks, enclosure, etc.

## CUSTOM

In this board you can add an extra pair of diodes to increase the tone versatility of the pedal. I'd recommend to use a complete different type of diode to the stock ones, you can go for a pair of red LEDs for a marshallish tone with less compressions than the standard ones, or go for a 1n4001. The best as always is to socket and try it out.

This project includes 3 capacitors slots that could be selected by the builder, as with the diodes here you can experiment with the values you consider would sound the best, take a look on the schematic and decide which ones would fit the best. Also it's a great exercise to learn how the different values affects the tone and overall response on the effect.

# Build Notes

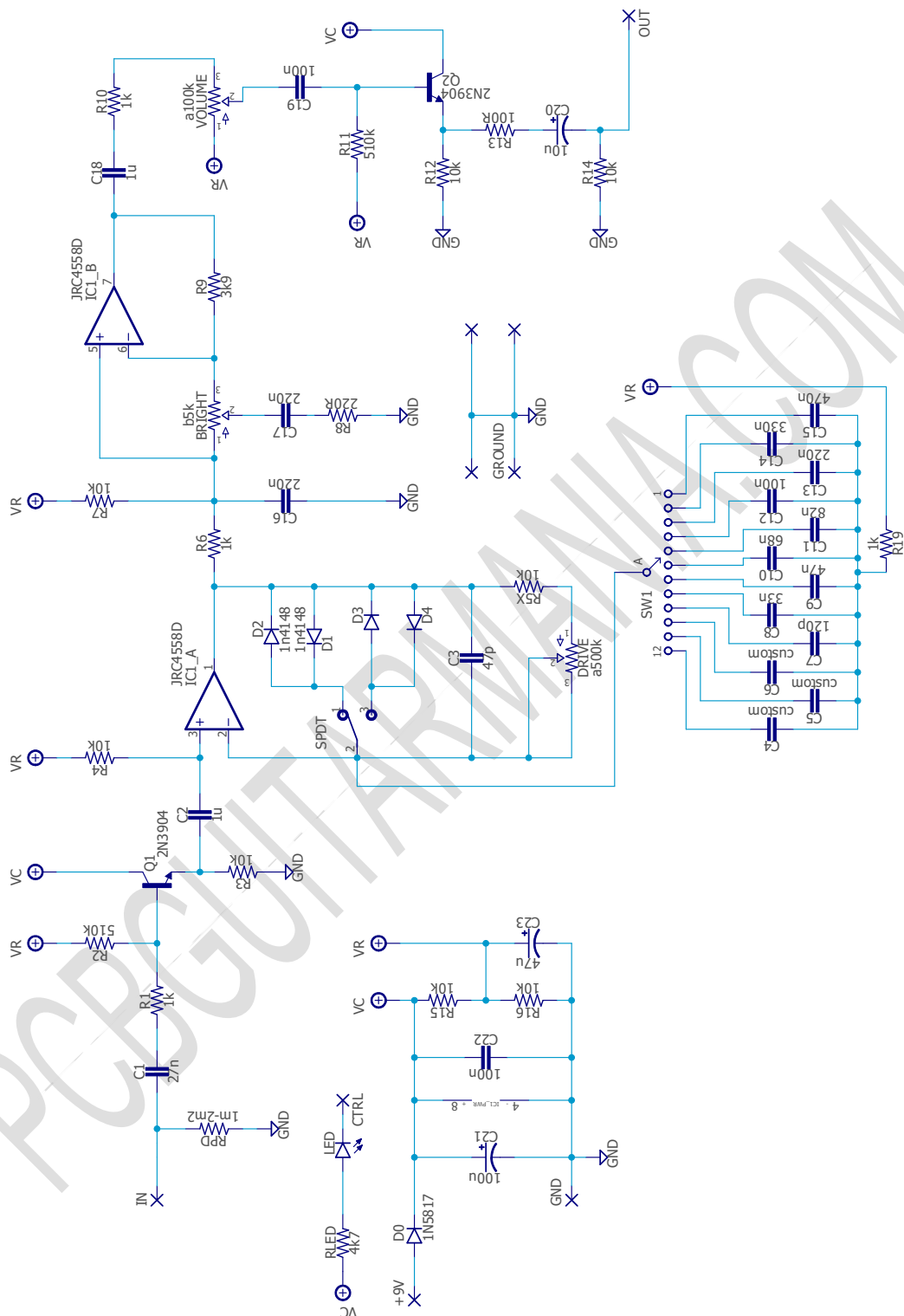
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If this is one of your first projects I recommend you to take a look on our [Pedal Building Guide](#)

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

# Schematic



# 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 control slug of your 3PDT.

This board has been designed to match our EZ 3PDT PCB check it [here](#) to access to 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 in an A4 page.

# Licensing and Usage

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We really appreciate your trust and support buying this PCB, as well as your will to dive into the DIY electronics world. That’s why for us is really important that you can make this project work properly and to enjoy not only the building process, but also to experiment and play with it on your rig.

We try to reply to every question we receive on our email or in our social media, but we try to encourage all our customers to join our [PCB Guitar Mania – Builders Group](#) on Facebook, in order to post all your doubts, issues, suggestions or request, as well to share your builds and have some feedback from us and other fellow builders!

All of our projects have been tested following this same guide on their standard configurations. Although, not all of the variations and mods have necessarily been tested. These are suggestions based on the schematic analysis, and on the experiences and opinions of others. Feel free to share with us your opinions and suggestions regarding the mods your own personal experimentation.

These boards may be used for commercial endeavors in any quantity unless specifically noted. No attribution is necessary, though accreditation or a link back is always greatly 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 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 silk screen, 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 own designs, with your brand and logo we could certainly reach an agreement.

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