

Goat Reaper Device

Based on:

Hoof Reaper

Effect type:

Versatile Muff / Tone bender type fuzz, Analog octave up

Build difficult:

Advanced

Number of parts:

High, total 111 components

Technology:

Germanium – Silicon hybrid transistors

Power consumption:

9V

Enclosure type:

1790NS

Get your board at:

[Goat Ripper Device](#)

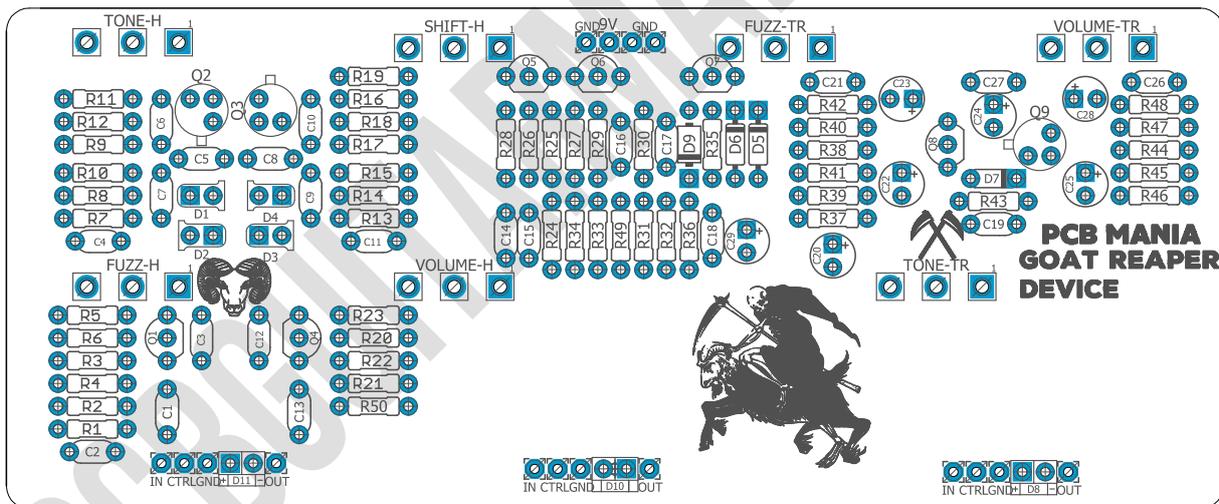
Get your kit at:

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

Project overview:

Is it a goat? Is it the reaper? No! It's the Reaper mounted in a Goat! That's an image not easy to forget, just as the tone possibilities this pedal can achieve.

The Goat Reaper Device is the must-have pedal for modern guitarists. Featuring the popular EQD [Hoof](#) and [Tone Reaper](#) fuzz pedals in one handy enclosure, the result it's perfect for all your sonic needs. Plus, the addition of the [Tentacle](#), an old-school analog octave up gives your sound extra depth and dimension.



Index

1. Project overview
2. Index, Introduction & Controls
3. Bills of Materials, BOM
4. Shopping Lists
5. Schematic
6. Components, Build Notes, Wiring Diagram
7. Drill Template, Licensing and Usage

Introduction

This incredible pedal can create everything from subtle octave-up overtones to crushing octave squalls that simulate exploding stacks of amps. Each effect can be used individually as well as in series, but the order of effects is preset for optimum performance.

If you are going to have three boards in one, you better choose the best of all them, and that's precisely what the Goat Reaper Device does!

On one side, you will find the critically acclaimed EQD [Hoof](#), a circuit that is considered one of the best muff-inspired fuzzes ever made! This pedal has roots in the classic Green Russian featuring a hybrid Germanium/Silicon design, pairing maximum tone with maximum temperature stability not found in finicky and expensive vintage units. The result? A circuit that combines the best elements of a fuzz effect and overdriven amplifier by delivering a healthy dose of smooth, harmonically rich sustain, along with its distinctive, vintage-style fuzz.

On the other side is the EQD [Tone Reaper](#), another vintage-style fuzz device that's a silicon/germanium hybrid. This section is ready to deliver an array of tones from every ToneBender era with careful tweaking of the tone and fuzz controls. From light and spitty to a growling crunch, all with a midrange punch to make it scratch and kick through any mix. You will also get those higher gain Randy Rhodes style grinds at its higher fuzz settings.

The third and last one is the [Tentacle](#), a knob analog octave up that matches perfectly with any type of fuzz and reveals its true potential once you pair it with other pedals.

All three effects can be used independently or stacked together for an array of endless tone possibilities.

So why wait? Mount the goat and ride with the Grim Reaper in search of the perfect sound!

Controls

Potentiometers

- Tone-H
- Volume-TR
- Tone-TR
- Volume-H
- Fuzz-TR
- Shift-H
- Fuzz-H

Bill of materials

| Resistors | |
|-----------|-------|
| Part | Value |
| R1 | 1m |
| R2 | 39k |
| R3 | 100k |
| R4 | 470k |
| R5 | 15k |
| R6 | 100r |
| R7 | 2k2 |
| R8 | 8k2 |
| R9 | 100k |
| R10 | 470k |
| R11 | 15k |
| R12 | 100r |
| R13 | 8k2 |
| R14 | 100k |
| R15 | 470k |
| R16 | 15k |
| R17 | 100r |
| R18 | 39k |
| R19 | 2k2 |
| R20 | 390k |
| R21 | 100k |
| R22 | 10k |
| R23 | 2k2 |
| R24 | 2m2 |
| R25 | 560k |
| R26 | 160k |
| R27 | 18k |
| R28 | 6k2 |
| R29 | 10k |
| R30 | 10k |
| R31 | 68k |
| R32 | 68k |
| R33 | 22k |
| R34 | 22k |
| R35 | 10k |
| R36 | 47k |

| | |
|-----|------|
| R37 | 1m |
| R38 | 470k |
| R39 | 47k |
| R40 | 10k |
| R41 | 330r |
| R42 | 10k |
| R43 | 1k |
| R44 | 10k |
| R45 | 1k |
| R46 | 4k7 |
| R47 | 33k |
| R48 | 33k |
| R49 | 4k7 |
| R50 | 4k7 |

| Capacitors | |
|------------|-------|
| Part | Value |
| C1 | 100n |
| C2 | 470p |
| C3 | 100n |
| C4 | 100n |
| C5 | 470p |
| C6 | 100n |
| C7 | 100n |
| C8 | 470p |
| C9 | 100n |
| C10 | 6n8 |
| C11 | 6n8 |
| C12 | 100n |
| C13 | 100n |
| C14 | 100p |
| C15 | 47n |
| C16 | 47n |
| C17 | 47n |
| C18 | 100n |
| C19 | 100pf |
| C21 | 47pf |
| C26 | 10n |

| | |
|-----|-------|
| C27 | 470pf |
|-----|-------|

| | |
|----|--------|
| Q9 | 2N2369 |
|----|--------|

| Electrolytic Capacitors | |
|-------------------------|-------|
| Part | Value |
| C20 | 1uf |
| C22 | 10uf |
| C23 | 1uf |
| C24 | 1uf |
| C25 | 22uf |
| C28 | 1uf |
| C29 | 100u |

| Switches | |
|----------|-----------------|
| Part | Value |
| - | 3PDT Stomp foot |
| - | 3PDT Stomp foot |
| - | 3PDT Stomp foot |

| Potentiometers | |
|----------------|--------|
| Part | Value |
| FUZZ-H | 50K B |
| FUZZ-TR | 250k B |
| SHIFT-H | 25K B |
| TONE-H | 100K B |
| TONE-TR | 100k B |
| VOLUME-H | 1M A |
| VOLUME-TR | 100K A |

| Diodes | |
|--------|-------------|
| Part | Value |
| D1 | 3mm red LED |
| D2 | 3mm red LED |
| D3 | 3mm red LED |
| D4 | 3mm red LED |
| D5 | 1N4148 |
| D6 | 1N4148 |
| D7 | 1N4148 |
| D8 | 3mm red LED |
| D9 | 1N5817 |
| D10 | 3mm red LED |
| D11 | 3mm red LED |

| Transistors | |
|-------------|--------|
| Part | Value |
| Q1 | 2N3904 |
| Q2 | 2N1308 |
| Q3 | 2N1308 |
| Q4 | 2N3904 |
| Q5 | 2N5089 |
| Q6 | 2N3906 |
| Q7 | 2N5089 |
| Q8 | 2N5088 |

| Jacks | |
|-------|------------|
| Part | Value |
| - | DC JACK |
| - | AUDIO JACK |
| - | AUDIO JACK |

Shopping list

| Resistors | | |
|-----------|-------|-----------------------------------|
| Qty | Value | Parts |
| 7 | 10k | R22, R29, R30, R35, R40, R42, R44 |
| 1 | 100n | R2 |
| 4 | 100k | R3, R9, R14, R21 |
| 3 | 100r | R6, R12, R17 |
| 1 | 160k | R26 |
| 1 | 18k | R27 |
| 2 | 1k | R43, R45 |
| 2 | 1m | R1, R37 |
| 2 | 22k | R33, R34 |
| 3 | 2k2 | R7, R19, R23 |
| 1 | 2m2 | R24 |
| 1 | 330r | R41 |
| 2 | 33k | R47, R48 |
| 3 | 470k | R4, R10, R38, R15 |
| 2 | 47k | R36, R39 |
| 3 | 15k | R5, R11, R16 |
| 3 | 4k7 | R46, R49, R50 |
| 1 | 560k | R25 |
| 2 | 68k | R31, R32 |
| 1 | 6k2 | R28 |
| 2 | 8k2 | R8, R13 |
| 1 | 39k | R18 |
| 1 | 390k | R20 |

| Capacitors | | |
|------------|-------|---------------------------------------|
| Qty | Value | Parts |
| 9 | 100n | C1, C3, C4, C6, C7, C9, C12, C13, C18 |
| 1 | 100p | C14 |
| 1 | 100pf | C19 |
| 1 | 10n | C26 |
| 4 | 470p | C2, C5, C8, C27 |
| 2 | 6n8 | C10, C11 |
| 3 | 47n | C15, C16, C17 |
| 1 | 47pf | C21 |

| Electrolytic Capacitors | | |
|-------------------------|-------|--------------------|
| Qty | Value | Parts |
| 1 | 100u | C29 |
| 1 | 10uf | C22 |
| 4 | 1uf | C20, C23, C24, C28 |
| 1 | 22uf | C25 |

| Potentiometers | | |
|----------------|--------|-----------------|
| Qty | Value | Parts |
| 2 | 100K B | TONE-H, TONE-TR |
| 1 | 100k A | VOLUME-TR |
| 1 | 1M A | VOLUME-H |
| 1 | 250k B | FUZZ-TR |
| 1 | 25K B | SHIFT-H |

| | | |
|---|-------|--------|
| 1 | 50K B | FUZZ-H |
|---|-------|--------|

| Transistors | | |
|-------------|---------|--------|
| Qty | Value | Parts |
| 2 | 2N1308 | Q2, Q3 |
| 1 | 2N2369 | Q9 |
| 2 | 2N3904 | Q1, Q4 |
| 1 | 2N3906- | Q6 |
| 1 | 2N5088 | Q8 |
| 2 | 2N5089 | Q5, Q7 |

| Switches | | |
|----------|-----------------|-------|
| Qty | Value | Parts |
| 3 | 3PDT Stomp foot | - |

| Diodes | | |
|--------|-------------|------------------------------|
| Qty | Value | Parts |
| 3 | 1N4148 | D5, D6, D7 |
| 1 | 1N5817 | D9 |
| 7 | 3mm red LED | D1, D2, D3, D4, D8, D10, D11 |

| Jacks | | |
|-------|------------|-------|
| Qty | Value | Parts |
| 1 | DC JACK | - |
| 2 | AUDIO JACK | - |

Components Recommendations

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

If this is one of your first projects, I recommend you 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 1790NS 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!