

# Swedish Metal

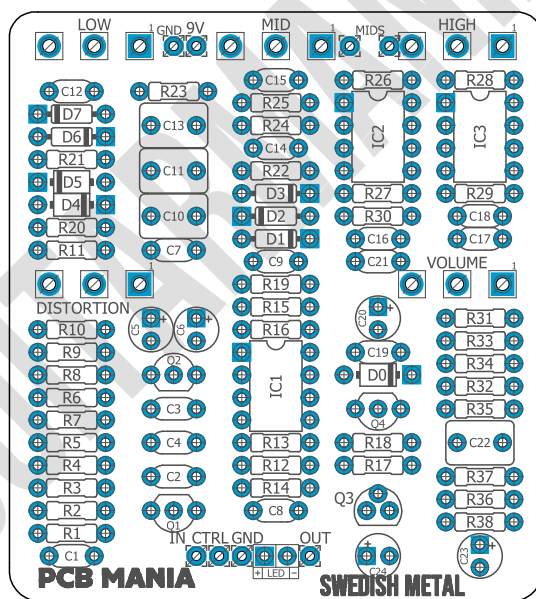
**Based on:**  
BOSS HM2  
**Effect type:**  
High gain Distortion  
**Build difficult:**  
Advanced

**Amount of parts:**  
High, total 82 components  
**Technology:**  
Dual OpAmp  
**Power consumption:**  
9V

**Enclosure type:**  
125b  
**Get your board at:**  
[Swedish Metal](#)  
**Get your kit at:**  
[Das Musikding \(Europe\)](#)

## Project overview:

Inspired by Boss HM2, one of the most important distortion pedals in metal's history which defined 80s heavy metal tone. This pedal is a cult classic that any guitarist must-have has a companionship.



## Index

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

# Introduction

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We actually do not understand why the Boss MH2™ even has knobs, but we added one more to make it more useful. I mean, you crank them all and get the sound 1990 metal tone from Sweden. Instant Entombed buzzsaw tones just by pushing the footswitch down. But still, giving the EQ a third band makes it easier to use it with all kinds of amps. Make sure you check the footprint of the 2.2uf you buy. They can cause some headaches if you source too big ones.

There is scarcely a more important pedal in underground metal. Used in many different contexts across the last three decades, it is still in force and vigorous than ever.

## Controls

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- DISTORTION
- HIGH
- LOW
- MID\* (Optional)
- VOLUME

# Bill of materials

Resistors	
Part	Value
R1	2M2
R2	10k
R3	1M
R4	10k
R5	22k
R6	100k
R7	470k
R8	22R
R9	150R
R10	10k
R11	47k
R12	22k
R13	100k
R14	470k
R15	120R
R16	1k
R17	68k
R18	10k
R19	220k
R20	10k
R21	10k
R22	68k
R23	3k3
R24	330R
R25	100k
R26	330R
R27	82k*
R28	330R
R29	100k
R30	3k3
R31	10k
R32	10k
R33	470k
R34	1k
R35	100k
R36	10k

R37	10k
R38	4k7

Capacitors	
Part	Value
C1	47n
C2	47n
C3	100pF
C4	47n
C7	47n
C8	100pF
C9	100pF
C10	1u
C11	1uF
C12	1n
C13	1.5uF
C14	68n
C15	150n
C16	6n8*
C17	4n7
C18	100n
C19	470pF
C21	47n
C22	1uF

Electrolytic Capacitors	
Part	Value
C5	47uF
C6	10uF
C20	10uF
C23	100uF
C24	47uF

Potentiometers	
Part	Value
DISTORTION	250kB
HIGH	10kA
LOW	10kA
MID*	10kA
VOLUME	10kA

IC	
Part	Value
IC1	JRC4558
IC2	JRC4558
IC3	JRC4558

Transistors	
Part	Value
Q1	2N5457
Q2	2N5088
Q3	2N5087
Q4	2N5088

Diodes	
Part	Value
D0	1N5817
D1	1N914
D2	1N914
D3	1N914
D4	BAT46
D5	BAT46
D6	1N914
D7	1N914
LED	3mm LED

# Shopping list

Resistors		
Qty	Value	Parts
4	100k	R6, R13, R25, R29, R35
10	10k	R2, R4, R10, R18, R20, R21, R31, R32, R36, R37
1	120R	R15
1	150R	R9
1	1M	R3
2	1k	R16, R34
1	220k	R19
1	22R	R8
2	22k	R5, R12
1	2M2	R1
3	330R	R24, R26, r28
2	3k3	R23, R30
3	470k	R7, R14, R33
1	47k	R11
1	4k7	R38
2	68k	R17, R22
1	82k	R27
1	R29	R29

Capacitors		
Qty	Value	Parts
1	1.5uF	C13
1	100n	C18
3	100pF	C3, C8, C9
1	150n	C15
1	1n	C12
1	1u	C10
2	1uF	C11, C22
1	470pF	C19
5	47n	C1, C2, C4, C7, C21
1	4n7	C17

1	68n	C14
1	6n8	C16

Electrolytic Capacitors		
Qty	Value	Parts
1	100uF	C23
2	10uF	C6, C20
2	47uF	C5, C24

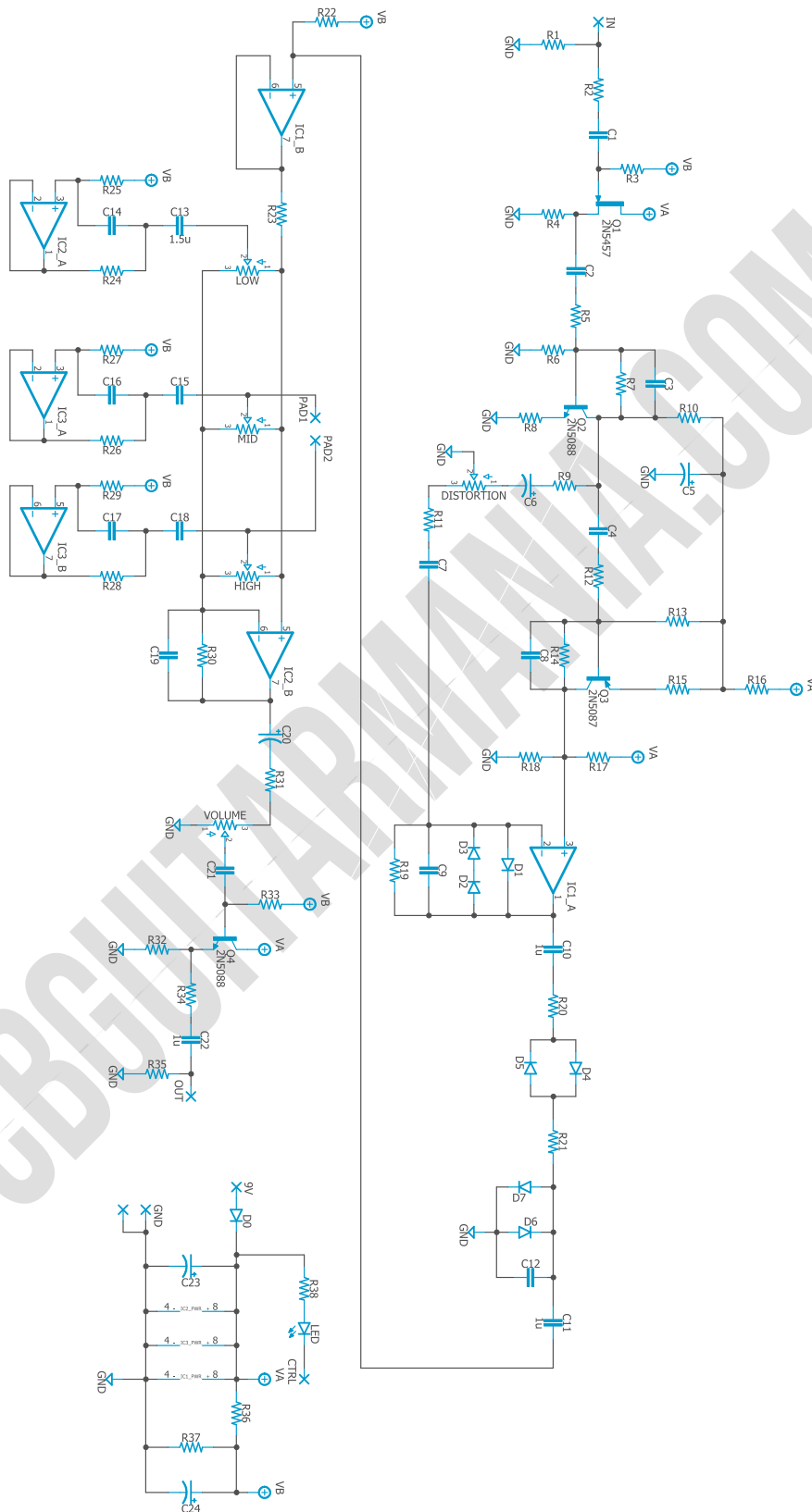
Potentiometers		
Qty	Value	Parts
4	10kA	HIGH, LOW, MID*, VOLUME
1	250kB	DISTORTION

IC		
Qty	Value	Parts
3	JRC4558	IC1, IC2, IC3

Transistors		
Qty	Value	Parts
1	2N5087	Q3
2	2N5088	Q2, Q4
1	2N5457	Q1

Diodes		
Qty	Value	Parts
1	1N5817	D0
5	1N914	D1, D2, D3, D6, D7
2	BAT46	D4, D5
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.

**Mids control MOD\*** This board supports possibility of including a Mids control to make this metal machine more versatile. To do so you have to place a jumper in between the pads labeled MIDS on top in between High and Mid pots and replace R27 for a 100k resistor and C16 for 10n capacitor. Bear in mind this mods will alter the overall character of the pedal. For stock version leave the mids pot unpopulated.

## 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. 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

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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 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

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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

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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!