

OmniRat (v1.0) Build Guide

The OmniRat allows you to build the ultimate ProCo Rat pedal clone - thanks to an internal 3-position DIP Switch, you can alter the clipping arrangement to produce almost *all* of the various Rat editions manufactured over the years - in one pedal! The 'Reutz Mod' is also available, which lowers the gain on tap, but also tames the high end for a warmer sound.

BUILD NOTES:

The IC:

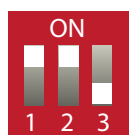
Sadly, the **LM308N** is no longer in production and is getting ever harder to find (but not impossible). Several alternatives to look for include the LM308AH (TO-99 metal-can IC) and the OP07DP, which can be found at Small Bear Electronics. As always, socket those ICs!

Clipping Section / Rat Versions:

Below is a key to help set the DIP switches to enable/disable the Reutz mod and change between the various Rat versions.



DIP Switch 1: If DIP Switch 1 is in the **ON** position, then it is the stock circuit. Switching DIP 1 to the **OFF** position engages the **Reutz Mod** (you can turn the Reutz mod on or off across all of the Rat versions below).



DIP Switch 2 ON and DIP Switch 3 OFF: Silicon diode clipping. This is the **Rat / Rat 2** stock circuit.



DIP Switch 3 ON: This engages the pair of germanium diodes, and is the sound of the **U Dirty Rat** version. (Note: if both DIP2 and DIP3 are ON, you will still be in **U Dirty Rat** mode, as the germanium diodes have the lowest forward voltage, and conduct before the other sets of diodes)



DIP Switch 2 and DIP Switch 3 ON: The clipping is an LED pair, and is the sound of the **Turbo Rat** version. (Fun fact: the internal LEDs will light up as you play your instrument, which is entertaining to watch)

Confused yet? Not to worry! There is a handy DIP Switch key printed directly on the circuit board, so you won't need to bring this build guide to your gig :D

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Resistors

R1	1M
R2	1M
R3	1K
R4	560R
R5	1K
R6	1K5
R7	1M
R8	10K
R9	47R
R10	100K
R11	100K
R12	CLR*
R13	47R

Diodes

D1	1N914
D2	1N914
D3	1N34A
D4	1N34A
D5	3mm Red LED
D6	3mm Red LED
D7	1N60P or 1N4001
D8	LED

ICs

IC1	LM308N**
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Capacitors

C1	22n	Film
C2	1n	Film
C3	33p	Film/Ceramic
C4	100p	Film/Ceramic
C5	2.2uF	Polarized Electro
C6	4.7uF	Polarized Electro
C7	4.7uF	Polarized Electro
C8	3n3	Film
C9	22n	Film
C10	1uF	Film
C11	100uF	Polarized Electro
C12	100n	Film
C13	100uF	Polarized Electro

Potentiometers

VOLUME	A100K
DIST	A100K
FILTER	A100K

Transistors

Q1	2N5457
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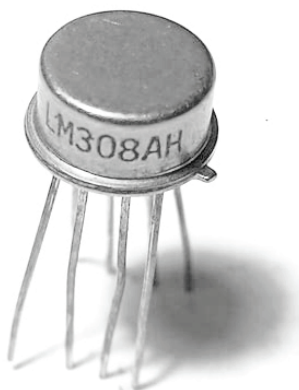
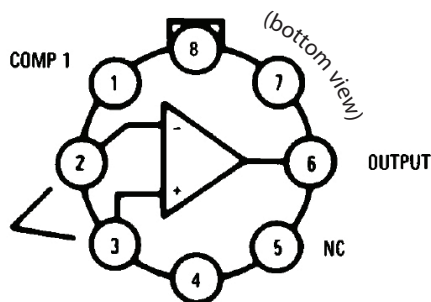
Transistors

SW1	3-Position DIP Switch
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* CLR = Current Limiting Resistor for the LED. 1k - 4.7k depending on desired brightness. (lower resistor value = brighter).

**LM308AH metal-can IC:

These sound lovely, and it is actually our preferred MOJO IC for a vintage Rat clone. Happy hunting!
If you are using this 8-pin metal-can IC, you will need to bend the pins to fit into an IC socket as shown below:



Pinch IC legs 1 - 4 & 5 - 8 into two straight rows with needle-nose pliers and insert into IC socket. The little metal tab indicates pin 8.

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GENERAL INSTRUCTION STEPS:

Important: do the assembly in the following order to avoid unnecessary hardship!

1. Install/solder all resistors & diodes that lay flat on the PCB.
2. Install/solder any sockets (for IC's, diodes, resistors.. anywhere you might want to change a part, value or type).
3. Install/solder any DIP switches (if any).
4. Install/solder all capacitors & transistors.
5. Install/solder ribbon cable connector and/or any other wiring on the PCB which go to the jacks/stomp switch.
6. Install/solder PCB mounted pots & LED
(**Important:** use pot dust caps or some other non-conductive material to keep back of pots from touching the back of the pcb)
7. Attach/solder wiring to the jacks & stomp switch.



TIPS:

- Check to make sure your wiring is complete before firing up the pedal for the first time, especially the 9V & ground wiring.
- Snip your component leads short after soldering. Your solder joints should look like shiny little Hershey's Kisses when finished.
- Socket anything you might want to change, or anything that would be very difficult to remove if faulty (IC's/transistors).

RESOURCES:

Parts Ordering:

Tayda Electronics
Mouser
Love My Switches
Small Bear Electronics

Website:

taydaelectronics.com
mouser.com
lovemyswitches.com
smallbear-electronics.mybigcommerce.com

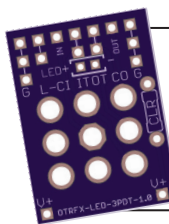
Specialties:

resistors, capacitors, diodes, sockets, LEDs, pots, knobs
resistors, capacitors, IC's
switches, knobs, enclosures, pre-wired LEDs
hardware, knobs, rare and vintage diodes, transistors & IC's



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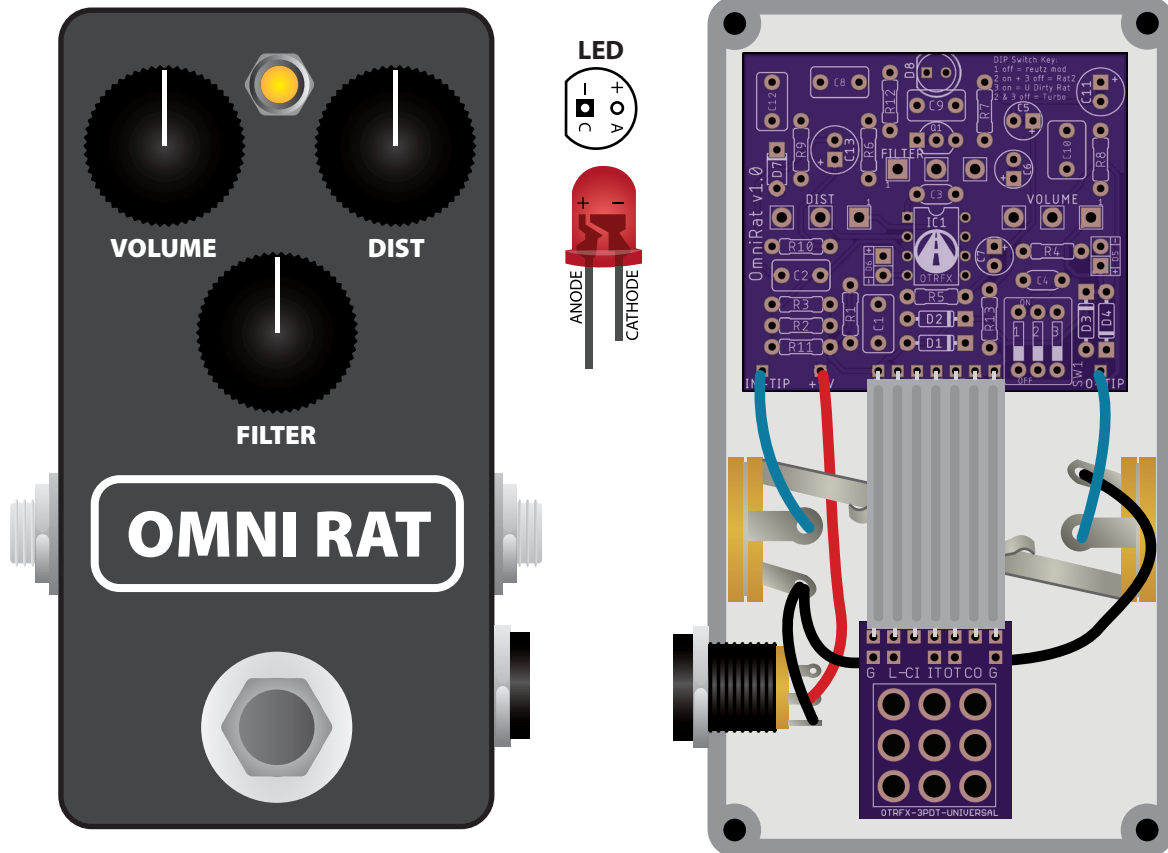


HATE WIRING STOMPSWITCHES?

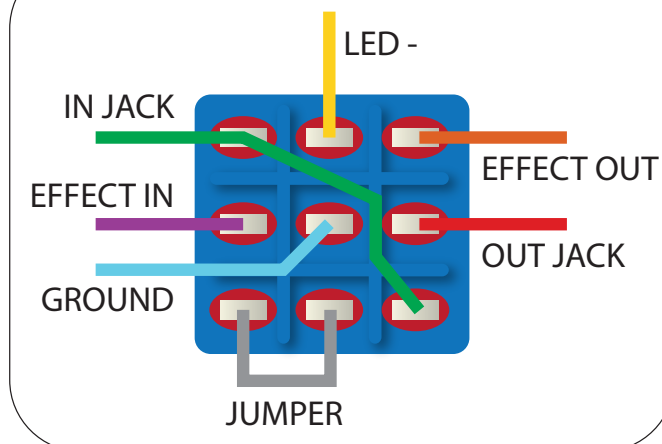
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1590B Enclosure



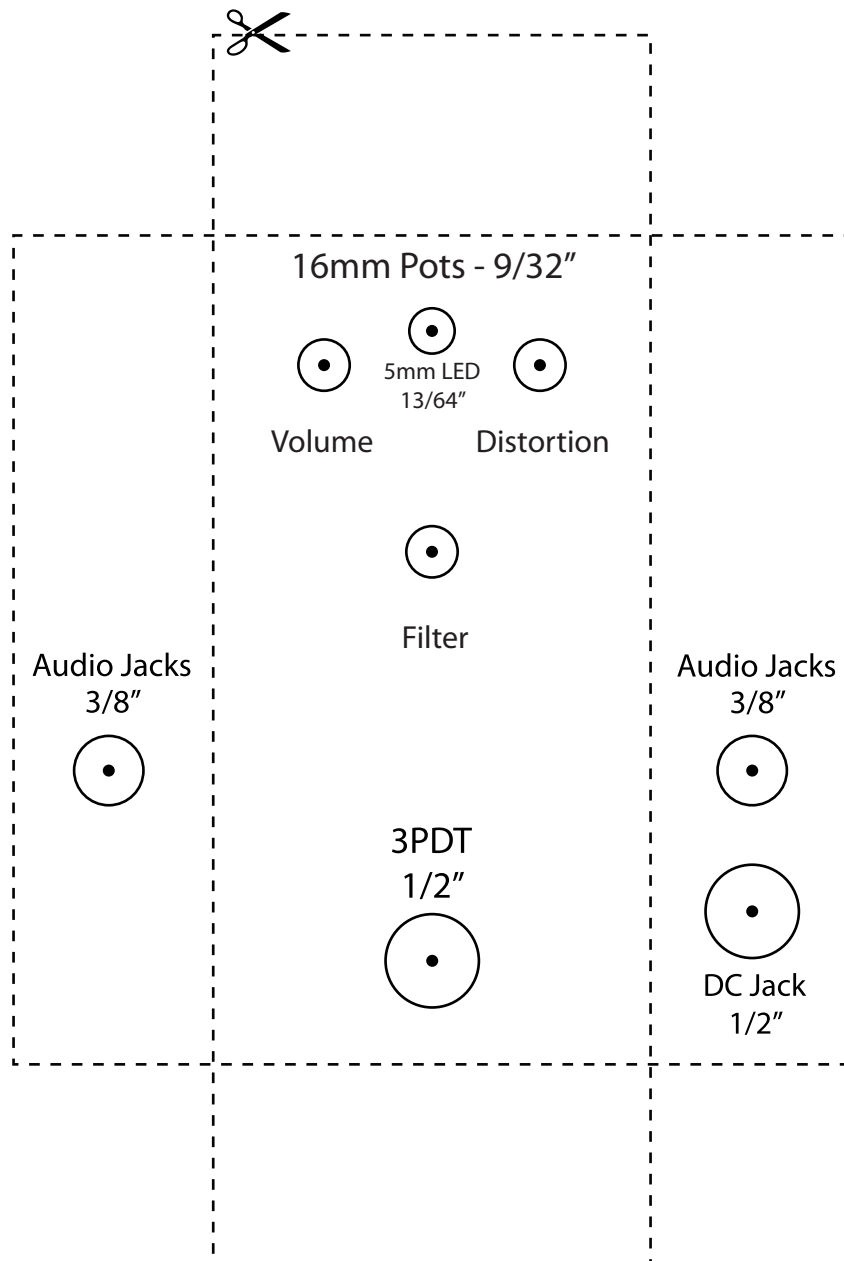
True Bypass Wiring



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Drilling Template

1590B Enclosure



Print at 100% and tape to enclosure for drilling