

PROJECT NAME
DELTA

BASED ON
Vertex Steel String Clean Drive

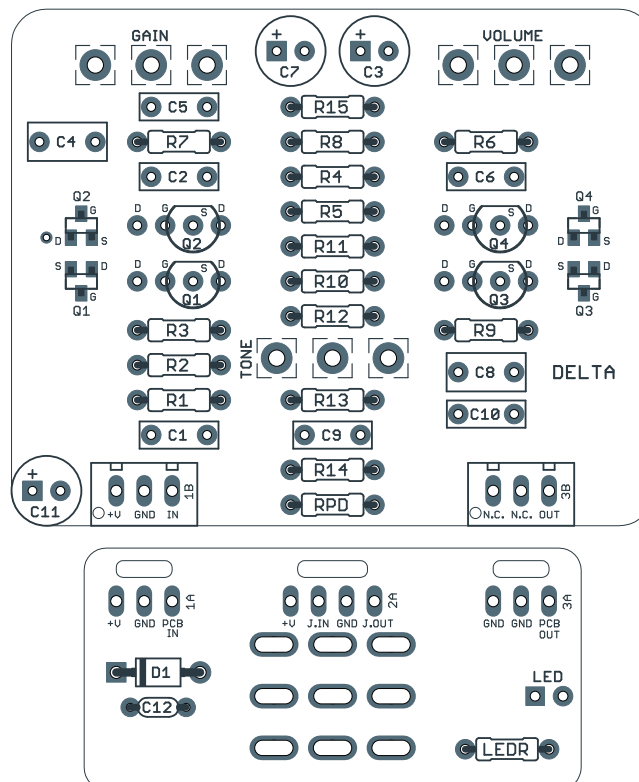
BUILD DIFFICULTY
■■■■■ Easy

EFFECT TYPE
JFET overdrive

DOCUMENT VERSION
1.0.2 (2021-06-04)

PROJECT SUMMARY

Jack Orman's classic mini-boost circuit, using J201 JFETs to achieve an amp-like overdrive tone.



Actual size is 2.3" x 1.86" (main board) and 1.78" x 0.86" (bypass board).

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INTRODUCTION

The Delta Amp Overdrive is an adaptation of the Vertex Steel String Clean Drive, first released in 2016 and marketed as a Dumble-style drive pedal. (The name refers to the Steel String Singer, a model of Dumble amplifier.)

While it was said to be the product of design research against a real Dumble Steel String amp, the Steel String is actually a near-exact copy of Jack Orman's classic Mini Booster circuit with Aron Nelson's mods and RG Keen's improved biasing scheme, with a few minor tweaks to the values.

The Delta Amp Overdrive is a direct adaptation of the Steel String Clean Drive, but with the option to use either through-hole or surface-mount (SMD) JFETs.

Since the J201 is very difficult to find in TO-92 through-hole format, and many DIY hobbyists are intimidated by SMD parts, Aion FX offers [J201s in SMD format](#) that have been pre-soldered to adapters so they can be used as through-hole parts.

USAGE

The Delta has the following controls:

- **Drive** controls the volume going into the JFET clipping stage. At higher drive levels, the JFETs will overload and clip the signal.
- **Tone** is a Big Muff-style balance control, panning between a bass emphasis on the left and a treble emphasis on the right.
- **Volume** controls the overall output of the effect.

PARTS LIST

This parts list is also available in a spreadsheet format which can be imported directly into Mouser for easy parts ordering. Mouser doesn't carry all the parts (most notably potentiometers) so the second tab lists all the non-Mouser parts as well as sources for each.

[View parts list spreadsheet](#) →

PART	VALUE	TYPE	NOTES
R1	1M	Metal film resistor, 1/4W	
R2	10k	Metal film resistor, 1/4W	
R3	10k	Metal film resistor, 1/4W	
R4	1M	Metal film resistor, 1/4W	
R5	10k	Metal film resistor, 1/4W	
R6	10k	Metal film resistor, 1/4W	
R7	10k	Metal film resistor, 1/4W	
R8	10k	Metal film resistor, 1/4W	
R9	10k	Metal film resistor, 1/4W	
R10	1M	Metal film resistor, 1/4W	
R11	10k	Metal film resistor, 1/4W	
R12	10k	Metal film resistor, 1/4W	
R13	10k	Metal film resistor, 1/4W	
R14	22k	Metal film resistor, 1/4W	
R15	10k	Metal film resistor, 1/4W	
RPD	2M2	Metal film resistor, 1/4W	Input pulldown resistor.
LEDR	4k7	Metal film resistor, 1/4W	LED current-limiting resistor. Adjust value to change LED brightness.
C1	10n	Film capacitor, 7.2 x 2.5mm	
C2	68n	Film capacitor, 7.2 x 2.5mm	
C3	100uF	Electrolytic capacitor, 6.3mm	
C4	1uF	Film capacitor, 7.2 x 3.5mm	
C5	2n2	Film capacitor, 7.2 x 2.5mm	
C6	68n	Film capacitor, 7.2 x 2.5mm	
C7	100uF	Electrolytic capacitor, 6.3mm	
C8	1uF	Film capacitor, 7.2 x 3.5mm	
C9	22n	Film capacitor, 7.2 x 2.5mm	
C10	2n2	Film capacitor, 7.2 x 2.5mm	
C11	100uF	Electrolytic capacitor, 6.3mm	Power supply filter capacitor.
C12	100n	MLCC capacitor, X7R	Power supply filter capacitor.

PARTS LIST, CONT.

PART	VALUE	TYPE	NOTES
D1	1N5817	Schottky diode, DO-41	
Q1	J201	JFET, N-channel, TO-92 or SOT-23	Can use either J201 (through-hole) or MMBFJ201 (SMD).
Q2	J201	JFET, N-channel, TO-92 or SOT-23	Can use either J201 (through-hole) or MMBFJ201 (SMD).
Q3	J201	JFET, N-channel, TO-92 or SOT-23	Can use either J201 (through-hole) or MMBFJ201 (SMD).
Q4	J201	JFET, N-channel, TO-92 or SOT-23	Can use either J201 (through-hole) or MMBFJ201 (SMD).
TONE	100k Ω	16mm right-angle PCB mount pot	
GAIN	500k Ω	16mm right-angle PCB mount pot	
VOL.	100k Ω	16mm right-angle PCB mount pot	
LED	5mm	LED, 5mm, red diffused	
IN	1/4" stereo	1/4" phone jack, closed frame	Switchcraft 112BX or equivalent.
OUT	1/4" mono	1/4" phone jack, closed frame	Switchcraft 111X or equivalent.
DC	2.1mm	DC jack, 2.1mm panel mount	Mouser 163-4302-E or equivalent.
BATT	Battery snap	9V battery snap	Optional. Use the soft plastic type—the hard-shell type will not fit.
FSW	3PDT	Stomp switch, 3PDT	
ENC	125B	Enclosure, die-cast aluminum	Can also use a Hammond 1590N1.

BUILD NOTES

J201 usage

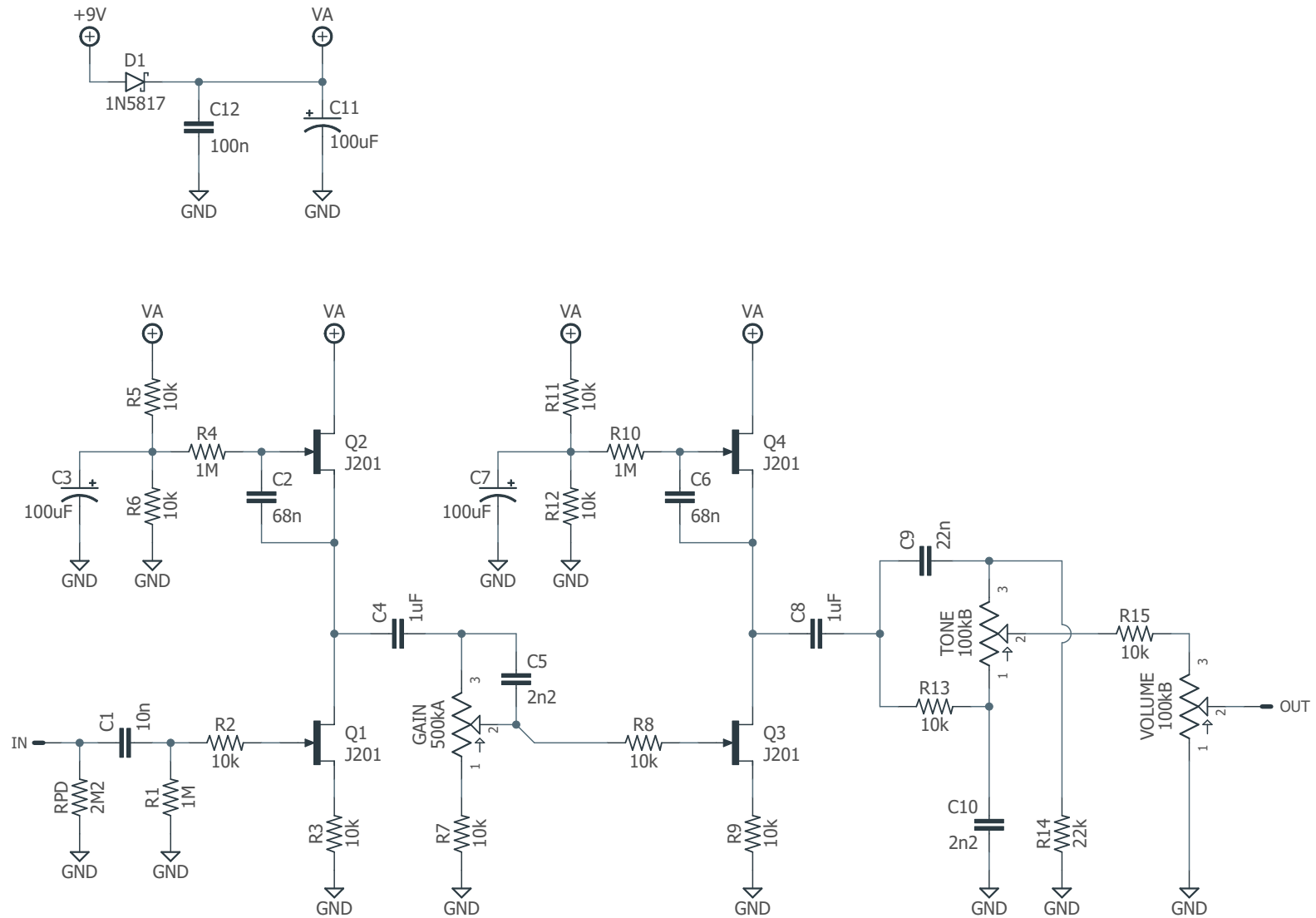
The J201 transistor is very popular in DIY pedal designs, but was discontinued in TO-92 through-hole format several years ago and is becoming very scarce. Genuine parts are getting expensive and many counterfeits have entered the market.

The MMBFJ201 is a SMD version that is still in production. On the PCB, two outlines have been included for each individual JFET, one for TO-92 and one for SMD (called SOT-23) right next to it. Make sure you only use one or the other—don't put both a through-hole and surface mount part in the two Q1 spots.

J201 adapters

Many DIY builders are intimidated by the small size of surface-mount parts. Aion FX offers [pre-soldered J201s on adapters](#) so they can easily be used as through-hole parts.

SCHEMATIC



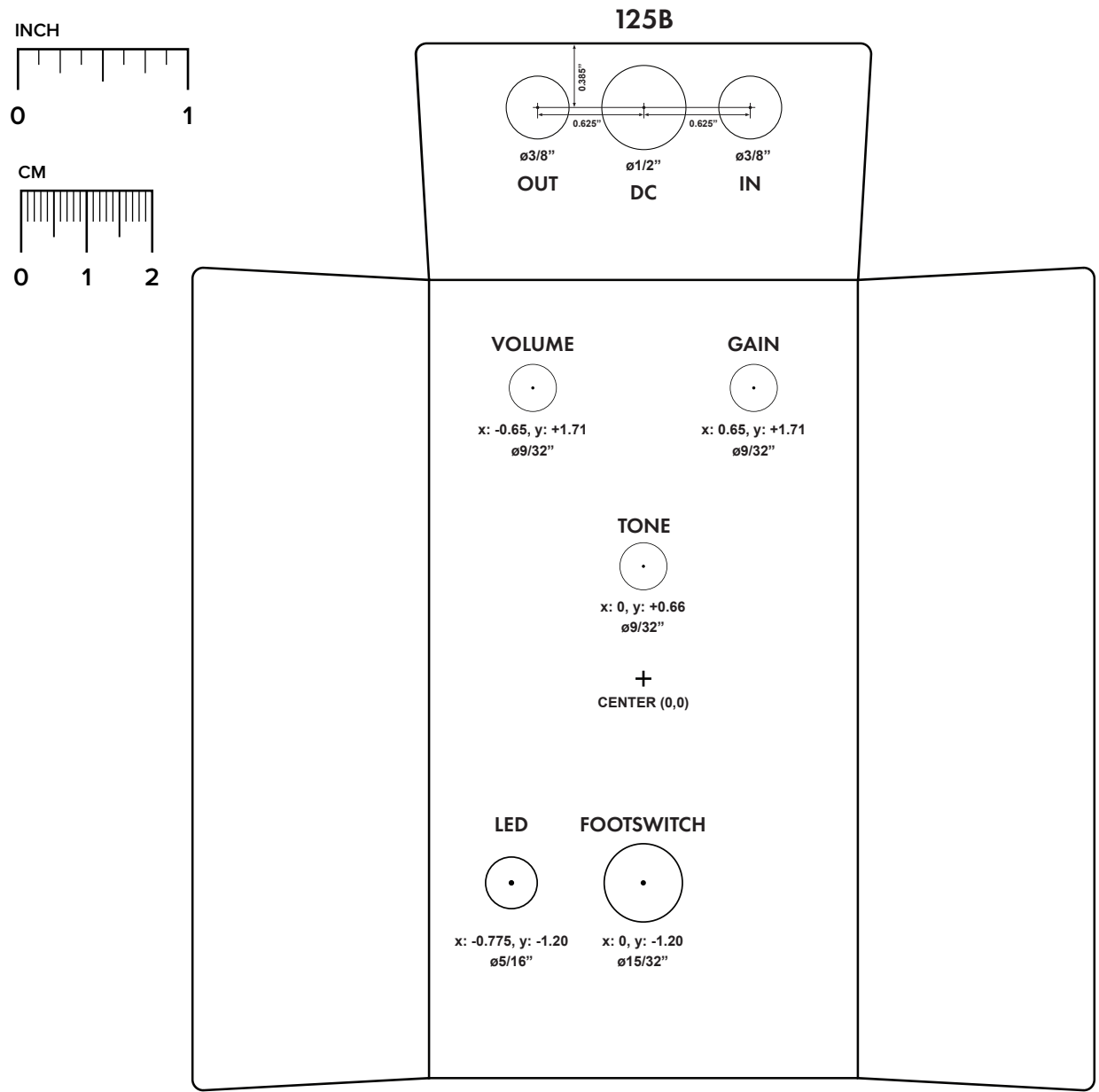
DRILL TEMPLATE

Cut out this drill template, fold the edges and tape it to the enclosure. Before drilling, it's recommended to first use a center punch for each of the holes to help guide the drill bit.

Ensure that this template is printed at 100% or "Actual Size". You can double-check this by measuring the scale on the printed page.

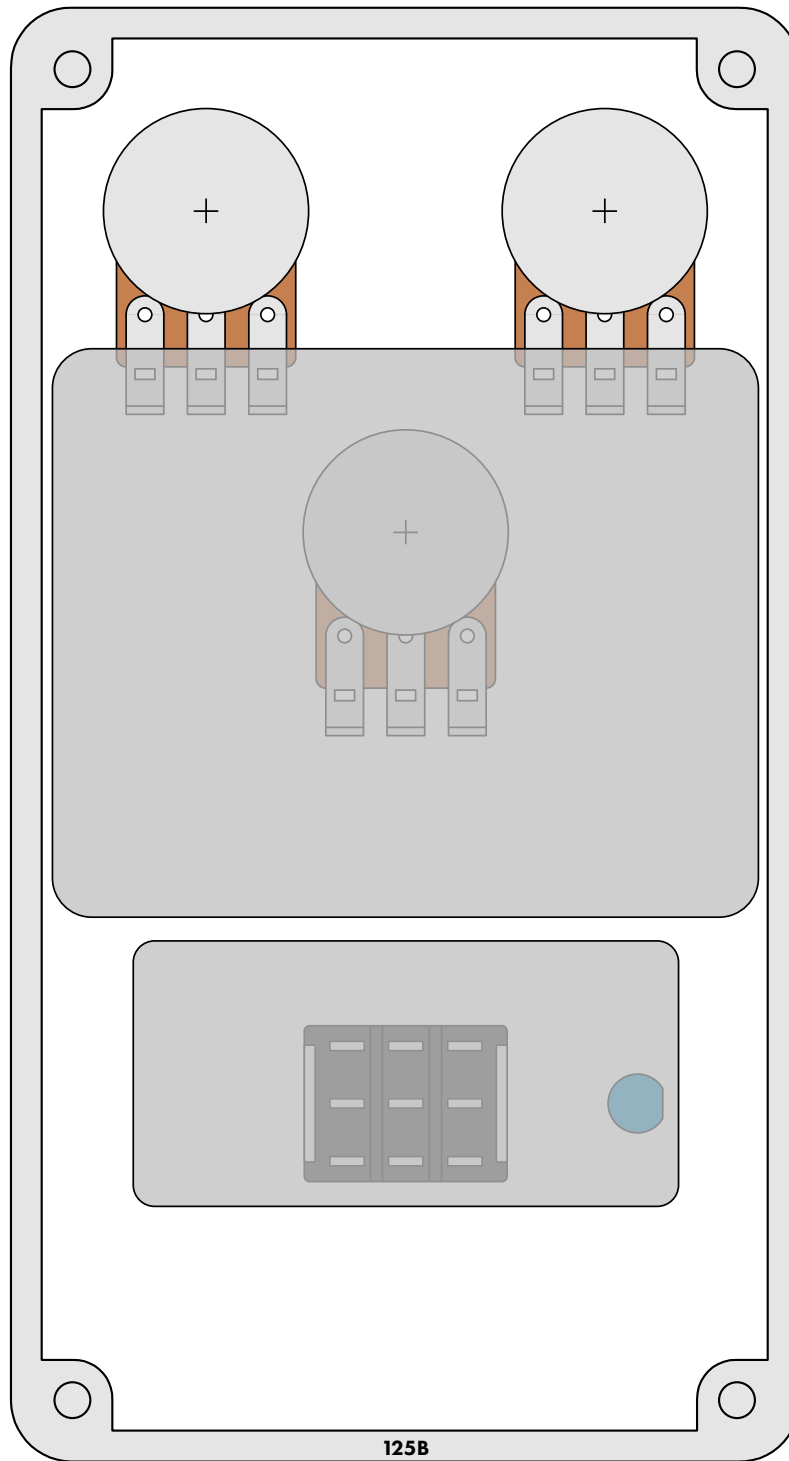
Top jack layout assumes the use of closed-frame jacks like the [Switchcraft 111X](#). If you'd rather use open-frame jacks, please refer to the [Open-Frame Jack Drill Template](#) for the top side.

LED hole drill size assumes the use of a [5mm LED bezel](#), available from several parts suppliers. Adjust size accordingly if using something different, such as a 3mm bezel, a plastic bezel, or just a plain LED.



ENCLOSURE LAYOUT

Enclosure is shown without jacks. See next page for jack layout and wiring.



WIRING DIAGRAM



*Shown with optional 9V battery. If battery is omitted, both jacks can be mono rather than one being stereo.
Leave the far-right lug of the DC jack unconnected.*

LICENSE & USAGE

No direct support is offered for these projects beyond the provided documentation. It's assumed that you have at least some experience building pedals before starting one of these. Replacements and refunds cannot be offered unless it can be shown that the circuit or documentation are in error.

All of these circuits have been tested in good faith in their base configurations. However, not all the modifications or variations have necessarily been tested. These are offered only as suggestions based on the experience and opinions of others.

Projects may be used for commercial endeavors in any quantity unless specifically noted. No attribution is necessary, though a link back is always greatly appreciated. The only usage restrictions are that **(1) you cannot resell the PCB as part of a kit without prior arrangement, and (2) you cannot “goop” the circuit, scratch off the screenprint, or otherwise obfuscate the circuit to disguise its source.** (In other words: you don't have to go out of your way to advertise the fact that you use these PCBs, but please don't go out of your way to hide it. The guitar effects industry needs more transparency, not less!)

DOCUMENT REVISIONS

1.0.2 (2021-06-04)

Changed C9 to 22n. There are some inconsistencies with C9-10 in the community traces out there, but C9 = 22n and C10 = 2n2 seem to match the sound of the original unit.

1.0.1 (2020-07-06)

Removed “Bass” pot from parts list which was included by mistake.

1.0.0 (2020-06-05)

Initial release.