



VFE DRAGON

FX TYPE: **Dynamic Overdrive**

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From the VFE Website

Tubescreamer. Rat. Klon. OCD. Tim. KoT. What do all these beloved drive circuits have in common? They all cut bass before distortion, and cut treble after distortion. This basic recipe is the backbone of many of the dirt pedals you use. Enter the Dragon, a dynamic overdrive designed to give you ultimate power over the pre-gain bass cut (HPF) and post-gain treble cut (LPF). Precisely tighten or fatten up your low end, smooth out the top end or add sparkle. Go from a transparent tone to a focused mid boost to push through a dense band mix, or just use it to light your favorite drive on fire.

- True bypass with buffered bypass option via internal switch
- Massive amount of boost on tap to push any amp
- Internal trimpot to adjust the compression of the gain stage
- Cut filters can be 6dB or 12dB for more extreme EQ cuts

INPUT IMPEDANCE: 1.8M-ohm

CURRENT DRAW: ~15ma off, ~45ma on @ 9V, ~25ma off, ~55ma on @ 18V

Downloadable PDF docs:

Parts List* - <https://www.dropbox.com/s/grjn4avn7c4au1k/Parts%20Matrix.pdf> (includes links to purchase components)

Schematic - https://www.dropbox.com/s/8b3hssbhslsw7i1/dragon_schematic.png

PCB layout & mod sheet - <https://www.dropbox.com/s/f46wy0tqy42mqol/Dragon%20layout.pdf>

Link to buy pre-drilled 1590B2 enclosure from Pedal Parts Plus - <https://www.pedalpartsplus.com/ProductDetails.asp?ProductCode=1590B2VFE>

The drill template for the Hammond 1590B2 enclosure is quite precise. Because of this, we recommend getting a pre-drilled enclosure from the link above. Here is the link to a hand-drawn list of measurements - <https://www.dropbox.com/s/fyiq00oc-16qqzuk/10-Hole%201590B2.pdf>

Peter's How-To Guide for building the Pinball, Dragon and Standout:

<https://www.youtube.com/watch?v=Z5uwB45FIm8>

Reverb demo of the Pinball, Dragon and Standout:

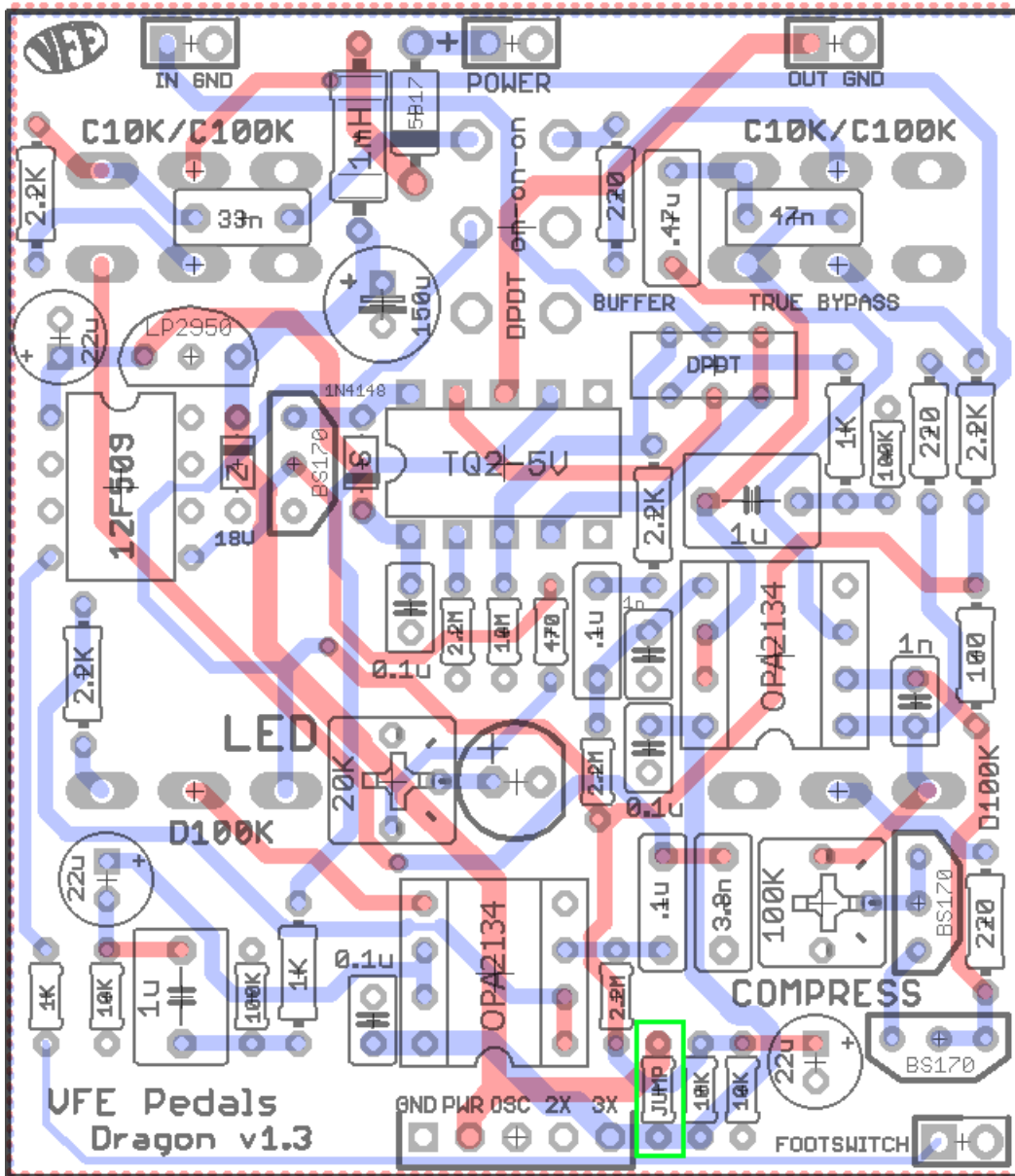
https://www.youtube.com/watch?v=QVI_Z43amll

Mike Herman's demo of the Dragon:

<https://www.youtube.com/watch?v=hRLU9xl7ixs>

Terms of Use: You are free to use purchased **Standout** circuit boards for both DIY and small commercial operations. You may not offer **Standout** PCBs for resale or as part of a "kit" in a commercial fashion. Peer to peer re-sale is, of course, okay.

Dimensions: 2.17" W x 2.49" H



Note: solder a jumper in the green box labeled "jump".

Shopping List

Shopping List						
QTY	Value	Type	Rating	Primary Source	Alternate Source	
1	100R	Metal / Carbon Film	1/4W	Mouser		
3	220R	Metal / Carbon Film	1/4W	Mouser		
2	1k	Metal / Carbon Film	1/4W	Mouser		
4	2k2	Metal / Carbon Film	1/4W	Mouser		
1	470R	Metal / Carbon Film	1/8W	Mouser		
1	1k	Metal / Carbon Film	1/8W	Mouser		
3	10k	Metal / Carbon Film	1/8W	Mouser		
2	100k	Metal / Carbon Film	1/8W	Mouser		
3	2M2	Metal / Carbon Film	1/8W	Mouser		
1	10M	Metal / Carbon Film	1/8W	Mouser		
Caps						
3	100n	MLCC	2.5mm	Mouser		
2	1n	Film		Mouser		Smallbear
1	3n3	Film	5mm	Mouser		Smallbear
2	33n	Film	5mm	Mouser		Smallbear
2	100n	Film	5mm	Mouser		Smallbear
1	330n	Film	5mm	Mouser		Smallbear
2	1uF	Film	5mm	Mouser		Smallbear
3	22uF	Electrolytic	2.5mm	Mouser		
1	150uF	Electrolytic	2.5mm	Mouser		
Diodes						
1	1N4148	or, 1n914		Mouser		Smallbear
1	1N5817			Mouser		Smallbear
1	20v	Zener		Mouser		
1	LED	*your choice color	3mm	Smallbear		
Transistors / Regulators						
1	LP2950		5v	Mouser		
3	BS170			Mouser		Smallbear
Inductors						
1	1mH	Inductor		Mouser		
Switches						
1	DPDT	Non-Latching Relay		Mouser		
1	DPDT	Slide		Mouser		
1	DPDT	On/On/On		Smallbear		
Op-Amps						
2	OPA2134			Mouser		
Pots						
1	20k	Bourns 3362p		Mouser		
1	100k	Bourns 3362p		Mouser		
2	100kA	PCB Right Angle	16mm	Smallbear		
Hardware						
2	Jacks	Mono		Smallbear		LoveMySwitches
1	Jacks	DC		Smallbear		LoveMySwitches
1	Foot-Switch	Momentary		LoveMySwitches		Smallbear
1	Enclosure	1590B2		PedalPartsPlus - PreDrilled		PedalPartsPlus - Undrilled
4	Knobs	*your choice		Smallbear		LoveMySwitches
Included w/ Purchase						
2	C10k/C100k	Custon PCB Dual-Gang	16mm			
1	12F509	Micro_Controller	DIP8			

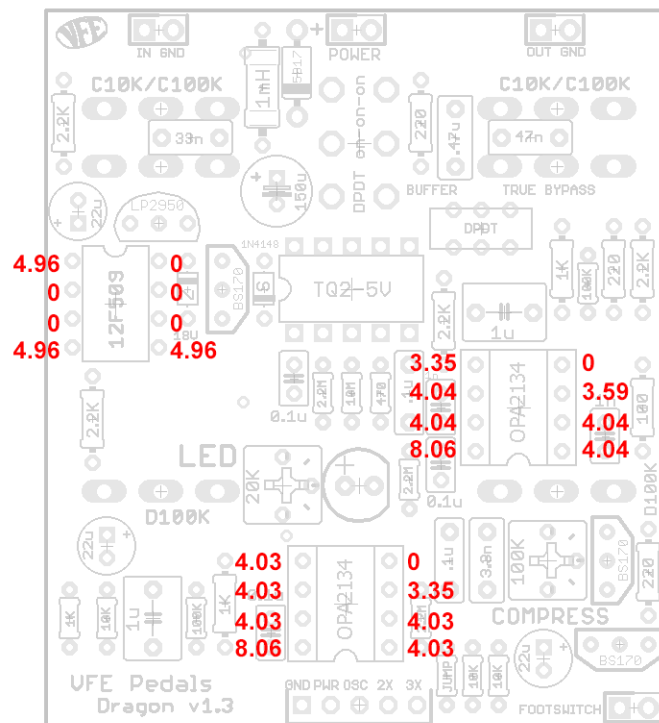
red indicates see important notes

BOM Notes

- You should be able to use an LM78L05 in place of the LP2950.
- The relay for the Dragon, Pinball and Standout is the non-latching version of the same relay used in the other VFE projects. Be sure to use the included Mouser link to get the right part!
- Peter uses enclosed mono jacks on his builds, but I recommend using the Lumberg style linked. The reason is the pre-drilled enclosures from PPP do not seem to take this into account, and enclosed jacks will not fit.
- Peter also uses an expensive momentary switch that has a soft click (the smallbear link). I used the much cheaper ones from LoveMyswitches and had no problem with them.
- The 100kD is a custom pot which is not available for the Dragon. It's simply a 100kA with 10% tolerance instead of 20%. Use a 100kA instead. I actually used a 50kA in my build as this had more than enough boost function for me.
- PedalPartsPlus does offer pre-drilled 1590B2 boxes for these projects. They are a bit more expensive but worth it, IMO. They are bang on for the pots/switches layout he uses on these boards. Just remember to use the Lumberg mono jacks. Also, the hole for the LED on the PPP enclosures is overdrilled. A 3mm will fall through so you'll need to solder it in place so it sits correctly. You can use a 5mm, but the hole is actually too small to fit through! A small inconvenience, but not a big deal.

Pre-made cart for all the Mouser items listed in the Primary Source column:
<https://www.mouser.com/ProjectManager/ProjectDetail.aspx?AccessID=c8f81d472c>

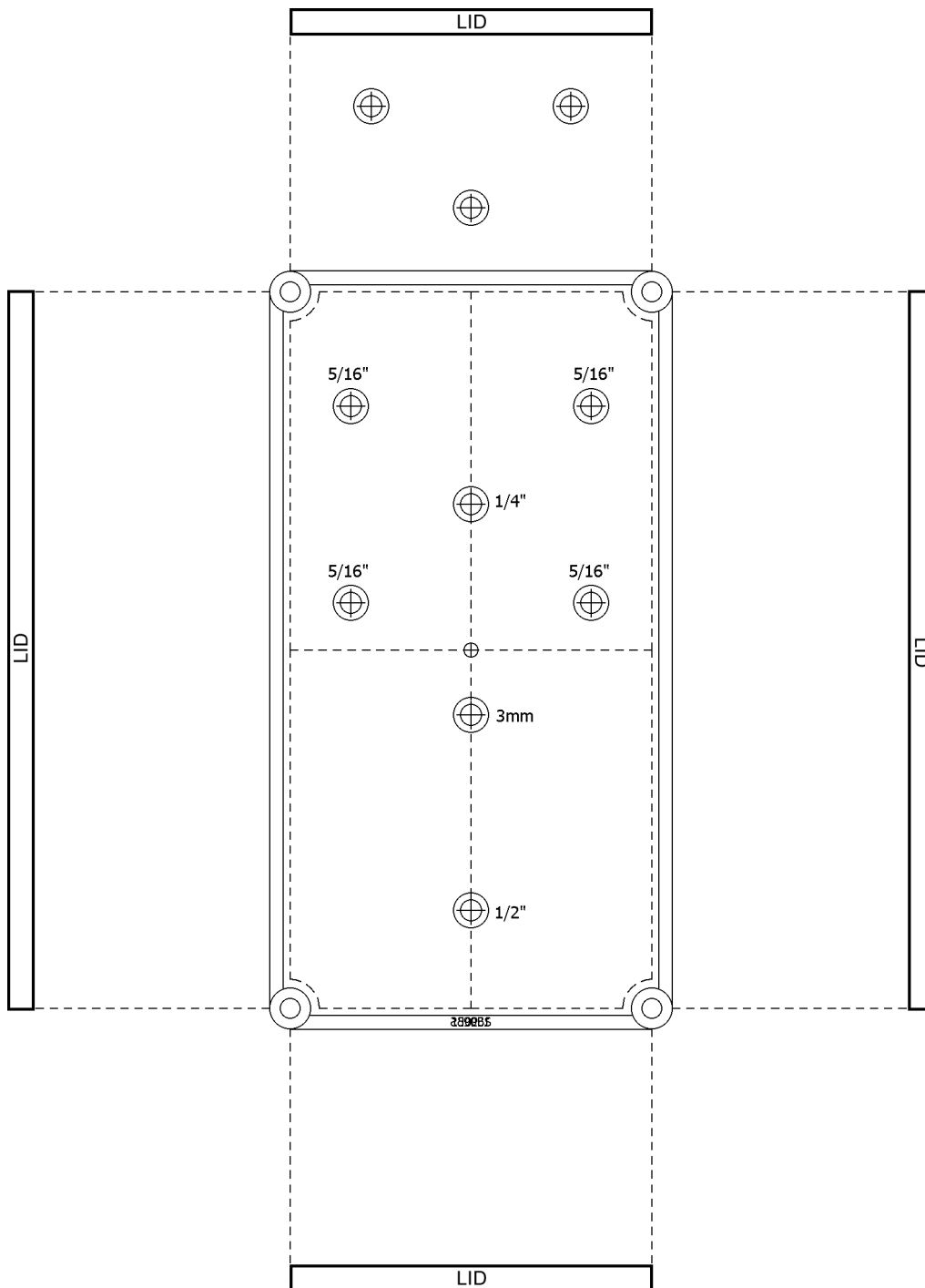
Voltages



9.42vDC One Spot. Voltages taken from "pedal on" state.

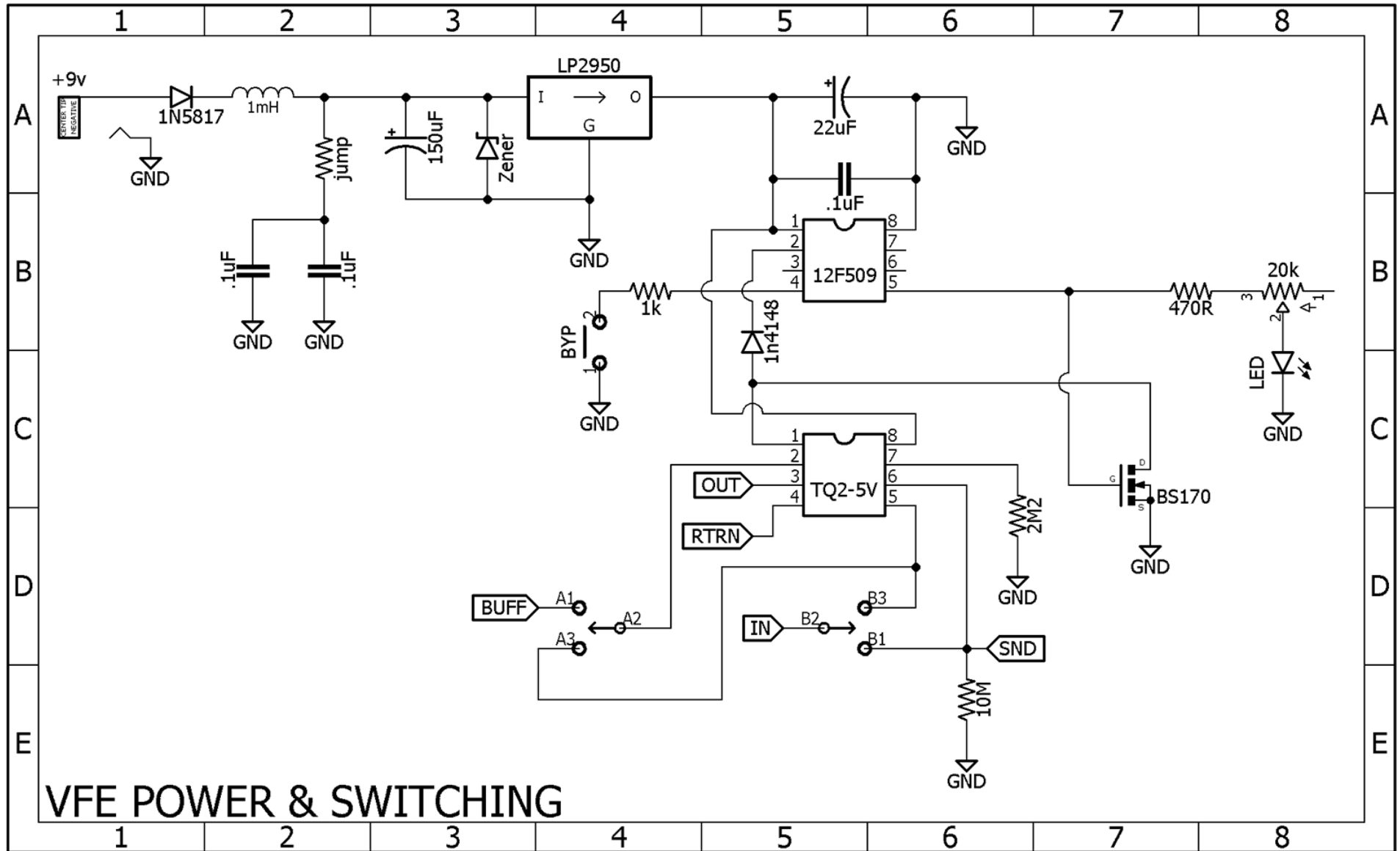
1590B2 Drill Guide

5.3" W x 7.34" H



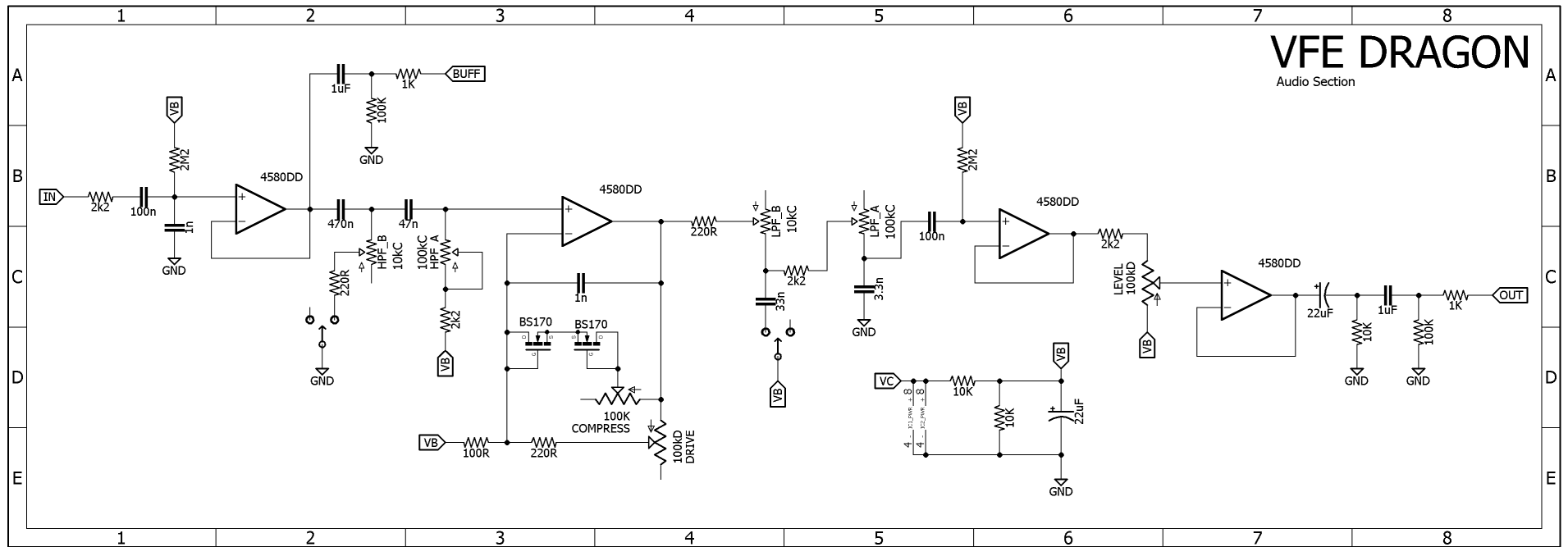
Download the Photoshop template:

http://www.madbeanpedals.com/projects/VFE/1590B2_DRILL.zip



Power and Switching are the same for the Pinball, Dragon and Standout.

Schematic



Build

