

VFE_DRAGONHOUND

FX TYPE: Distortion

Enclosure Size: 1590B

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Overview

[From the VFE website:](#)

The **DRAGON HOUND** is a dual overdrive + distortion pedal that combines the core circuits from the Alpha Dog and Pale Horse into one unique dirt box. Each circuit has a dedicated drive control, and the blend control can dial in saturated distortion tones that retain the clarity of an overdrive.

HOW THE DRAGON HOUND CAME TO BE

The Alpha Dog distortion and Pale Horse overdrive are my personal go-to pedals. After playing with both extensively, I wondered how the two circuits would sound blended. My experimenting with multiband distortion taught me that parallel drives can add saturation without squashing out your playing dynamics. I put the first prototype together (code named "Crown Jewel"), and was blown away with the blended tone.

I prefer the Dragon Hound over both the Alpha Dog and Pale Horse, especially for chords. This pedal is able to add more harmonic saturation without losing the clarity of each note, and do it naturally. It doesn't sound like two parallel pedals, just a complex wall of harmonic bliss.

Controls

A DRIVE: Sets the gain of the Alpha Dog distortion circuit. This side offers thick, vintage distortion that is dynamic and responsive.

P DRIVE: Sets the gain of the Pale Horse overdrive circuit. This side offers smooth, transparent drive with better top-end clarity.

LEVEL: Sets the gain of the mix stage. The LEVEL control can add even more boost, which means the Dragon Hound can get really loud!

INTERNAL CONTROL: The internal COMP trimpot sets the compression of the mosfet clipping section in the Pale Horse.

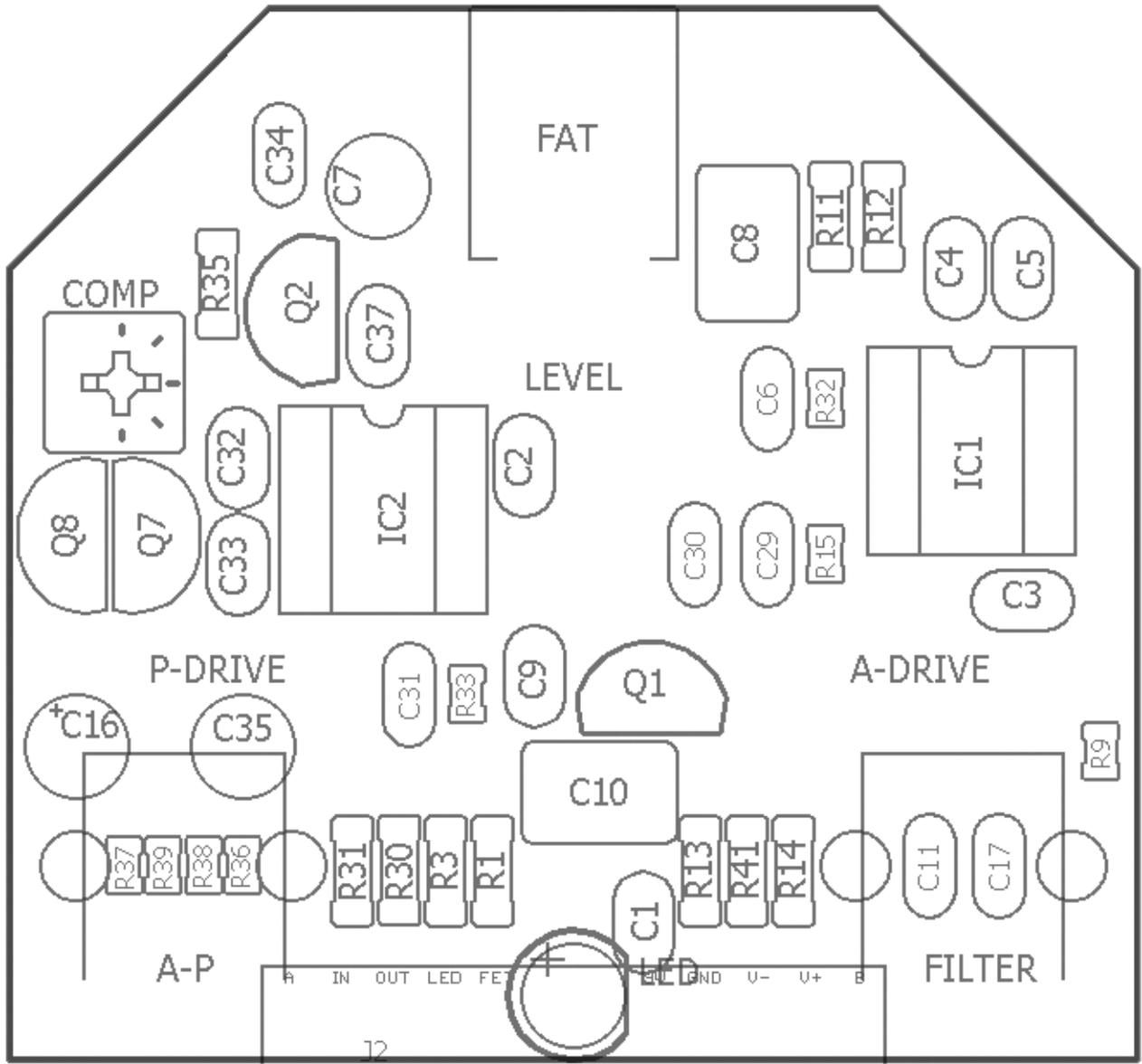
FAT: This dual-gang control affects the low end response of both the Alpha Dog & Pale Horse sides simultaneously. It's like having the FAT control from the Alpha Dog & the LOW control from the Pale Horse in one knob!

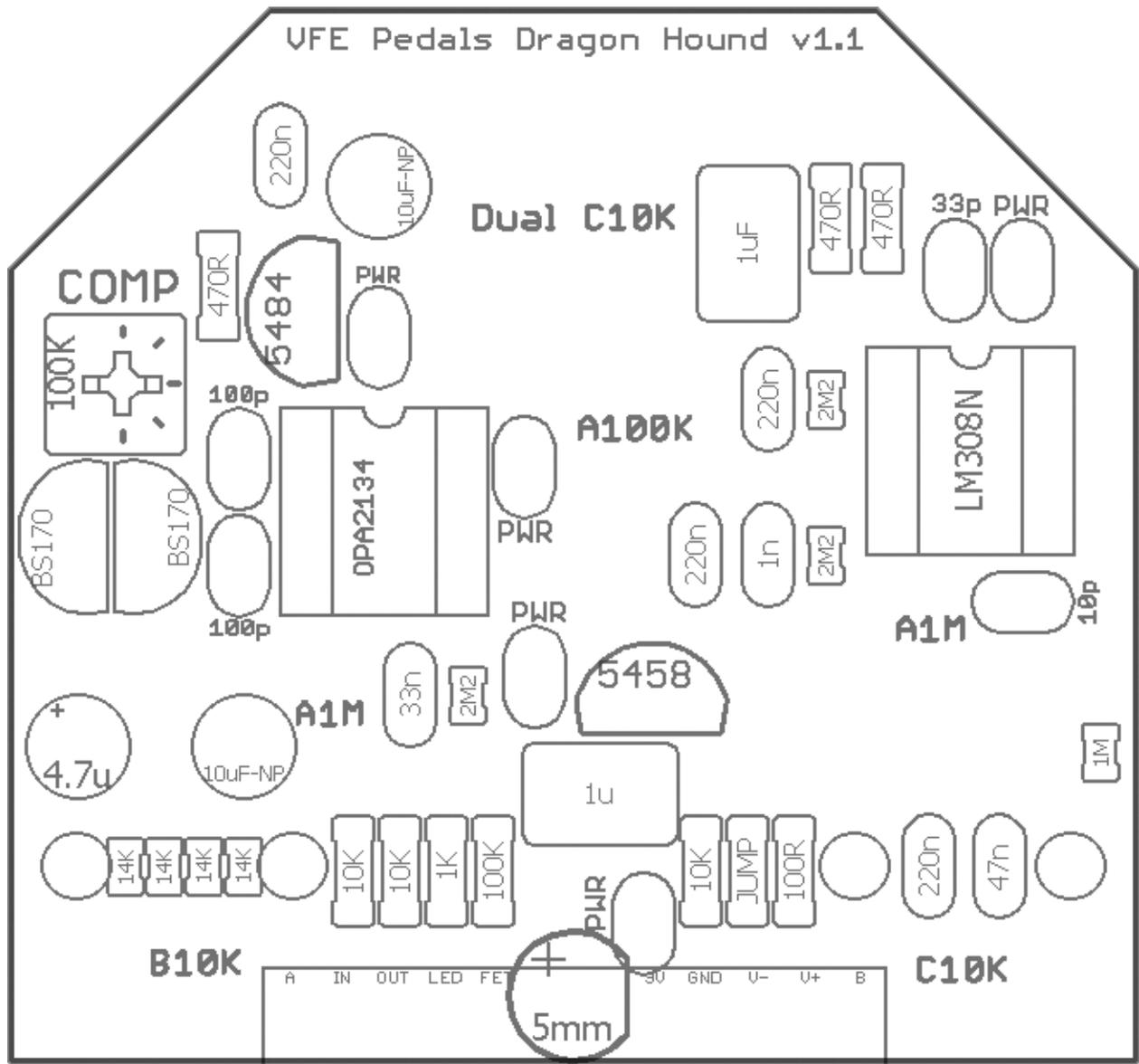
FILTER: Controls the post-gain, post-mix treble response. Cut highs to smooth out the top end, or crank it for extra bite and grit.

MIX: Blends between the Pale Horse overdrive and Alpha Dog distortion circuits. Set to P to isolate the overdrive, and set to A to isolate the distortion. But the real magic of the Dragon Hound is when you blend the two circuits together, allowing you to dial in a saturated tone with improved clarity and dynamics.

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

Technical assistance for your build(s) is available via the [madbeanpedals forum](#). Please go there rather than emailing me for assistance on [builds](#). This is because (1) I'm not always available to respond via email in a timely and continuous manner, and (2) posting technical problems and solutions in the forum creates a record from which other members may benefit.





Note the two JFETs are different. 2N5484 and 2N5458.

Resistors		Caps		Diodes	
R1	100K	C1	100n	LED	5mm
R3	1K	C2	100n	Transistors	
R9	1M	C3	10pF	Q1	2N5458
R11	470R	C4	33pF	Q2	2N5484
R12	470R	C5	100n	Q7	BS170
R13	10K	C6	220n	Q8	BS170
R14	100R	C7	10uF-NP	ICs	
R15	2M2	C8	1uF	IC1	LM308N
R30	10K	C9	100n	IC2	OPA2134a
R31	10K	C10	1uF	Trimmers	
R32	2M2	C11	220n	COMP	100K
R33	2M2	C16	4u7	Pots	
R35	470R	C17	47n	FAT	Dual 10kC
R36	14K	C29	1n	A-P	10kB
R37	14K	C30	220n	FILTER	10kC
R38	14K	C31	33n	LEVEL	100kA
R39	14K	C32	100pF	A-DRIVE	1MA
R41	JUMP	C33	100pF	P-DRIVE	1MA
		C34	220n		
		C35	10uF-NP		
		C37	100n		

Value	QTY	Type	Rating	Spacing
100R	1	Carbon / Metal Film	1/4W	
470R	3	Carbon / Metal Film	1/4W	
1K	1	Carbon / Metal Film	1/4W	
10K	3	Carbon / Metal Film	1/4W	
14K	4	Carbon / Metal Film	1/4W	
100K	1	Carbon / Metal Film	1/4W	
1M	1	Carbon / Metal Film	1/8 or 1/4W	
2M2	3	Carbon / Metal Film	1/8 or 1/4W	
10pF	1	Ceramic/MLCC	25v min.	2.5mm
33pF	1	Ceramic/MLCC	25v min.	2.5mm
100pF	2	Ceramic/MLCC	25v min.	2.5mm
100n	5	Ceramic/MLCC	25v min.	2.5mm
1n	1	Film	25v min.	5mm
33n	1	Film	25v min.	5mm
47n	1	Film	25v min.	5mm
220n	4	Film	25v min.	5mm
1uF	2	Film	25v min.	5mm
4u7	1	Electrolytic	25v min.	
10uF-NP	2	Electrolytic - NonPolar	25v min.	
LED	1	any color	3 or 5mm	
2N5458	1			
2N5484	1	or, J113		
BS170	2			
LM308N	1			
OPA2134a	1			
100K	1	Bourns 3362p		
Dual 10kC	1	*included with PCB	9mm	
10kB	1	PCB Right Angle, Plastic Shaft	9mm	
10kC	1	PCB Right Angle, Plastic Shaft	9mm	
100kA	1	PCB Right Angle	16mm	
1MA	2	PCB Right Angle	16mm	

10uF NP:

<https://smallbear-electronics.mybigcommerce.com/electrolytic-radial-50v-non-polarized/>

<https://www.taydaelectronics.com/10uf-50v-85c-bipolar-capacitor.html>

BS170:

https://www.mouser.com/ProductDetail/512-BS170_D74Z

<https://www.taydaelectronics.com/bs170-bs170nrag-mosfet-n-channel-60v-0-5a.html>

2N5458:

<https://stompboxparts.com/semiconductors/2n5458-jfet-nos-fairchild-on-semi/>

2N5484: Hard to get. Try a J113 instead (same pinout)

<https://smallbear-electronics.mybigcommerce.com/transistor-fet-j113/>

<https://www.mouser.com/ProductDetail/512-J113>

LM308:

You'll need to source this on your own.

OPA2134a:

<https://www.mouser.com/ProductDetail/595-OPA2134PA>

<https://www.taydaelectronics.com/opa2134pa-opa2134-ic-op-amp.html>

You can sub other dual op-amps, 4558, 4580DD, etc.

Bourns 3362p (100k):

<https://www.mouser.com/ProductDetail/652-3362P-1-104LF>

<https://www.taydaelectronics.com/potentiometer-variable-resistors/cermet-potentiometers/3362p/100k-ohm-trimmer-potentiometer-cermet-1-turn-3362p.html>

10kΩ 9mm Pot:

<http://smallbear-electronics.mybigcommerce.com/alpha-single-gang-9mm-right-angle-pc-mount-w-knurled-plastic-shaft/>

<https://www.taydaelectronics.com/potentiometer-variable-resistors/rotary-potentiometer/linear/10k-ohm-linear-taper-potentiometer-round-knurled-plastic-shaft-pcb-9mm.html>

10kΩ 9mm Pot: - sub 10kΩ if you cannot get the C taper

<https://www.taydaelectronics.com/potentiometer-variable-resistors/rotary-potentiometer/anti-log-reverse/10k-ohm-anti-log-taper-potentiometer-round-knurled-plastic-shaft-pcb-9mm.html>

16mm Pots (100kΩ, 1MA):

<https://www.taydaelectronics.com/potentiometer-variable-resistors/rotary-potentiometer/logarithmic/p-100k-ohm-logarithmic-taper-potentiometer-round-shaft-pc-mount-5707.html>

<https://www.taydaelectronics.com/potentiometer-variable-resistors/rotary-potentiometer/logarithmic/>

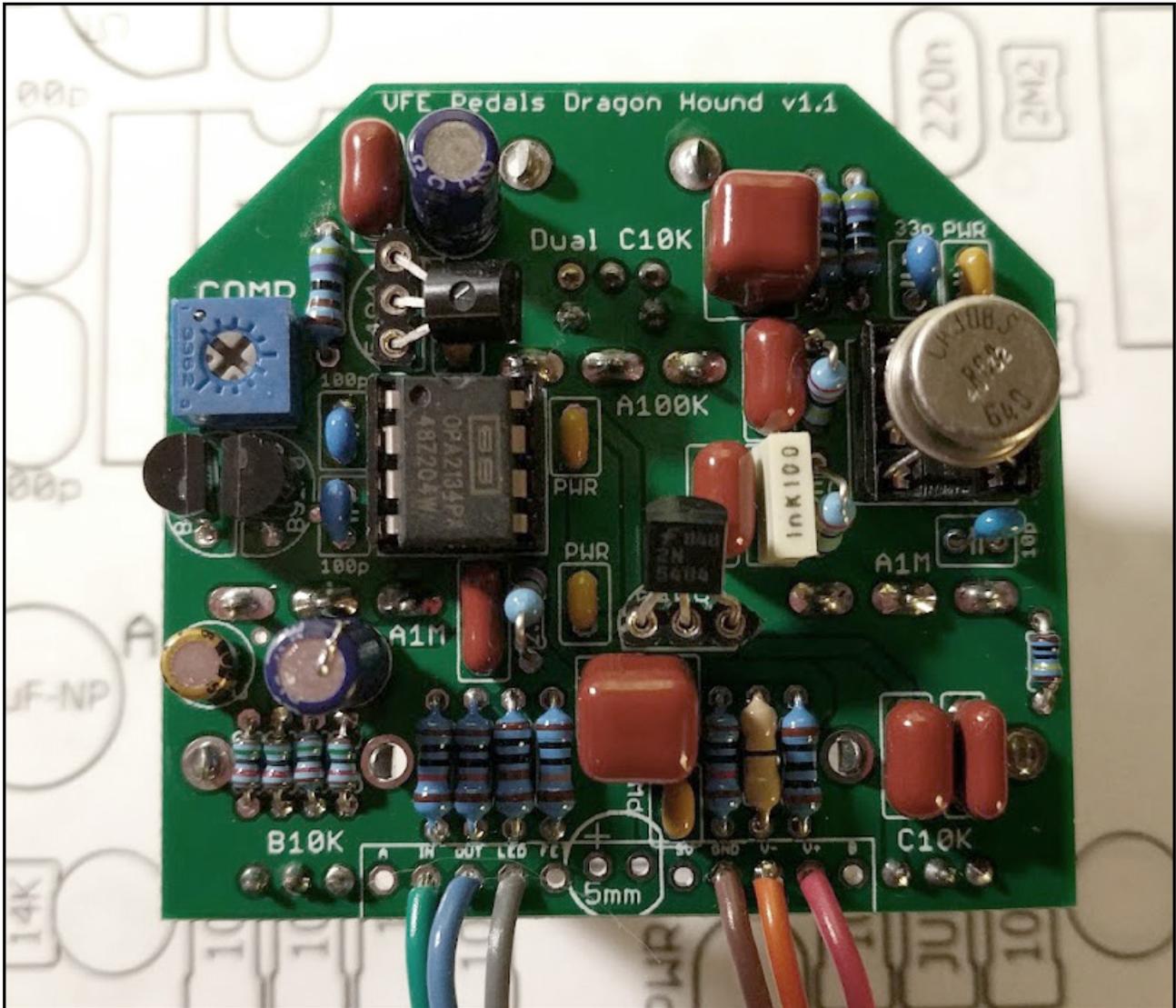
- As vfe builds go, this one is actually pretty easy even with two circuits in one. A couple areas on the 16mm pots are a bit tricky to solder so be careful to burn up any components!
- Don't forget to add the jumper! It's located between the 10k and 100R resistors.
- You're pretty much on your own for finding LM308N. Check eBay, forum members, maybe some other online shops. smallbear out for good, Tayda and Stompboxparts don't carry it.
- Full CCW, the Filter control cuts off a LOT of treble. To narrow this range (and get more control over the CW setting) you can lower C17 from 47n to 22n.
- For wiring diagram and drill template, see the [Switching Board v.3](#) documentation. This circuit does use the bi-polar power option (+/-9v). You can use a 12v or 15v Zener for the protection diode on the switching board.

IC1 LM308N		IC2 OPA2134a		Q1 2N5458		Q7 BS170	
1	8	1	-250mV	D	8.62	D	-250mV-ish
2	4.27	2	-250mV	S	0.75	G	-190mV
3	3.88	3	-203mV	G	0	S	-190mV
4	0	4	-8.1				
5	ignore	5	0	Q2 2N5484		Q8 BS170	
6	4.24	6	0	D	-198mV	D	-190mV
7	8.61	7	0	S	-8.1	G	-190mV
8	4.32	8	8.62	G	-8.1	S	-250mV-ish

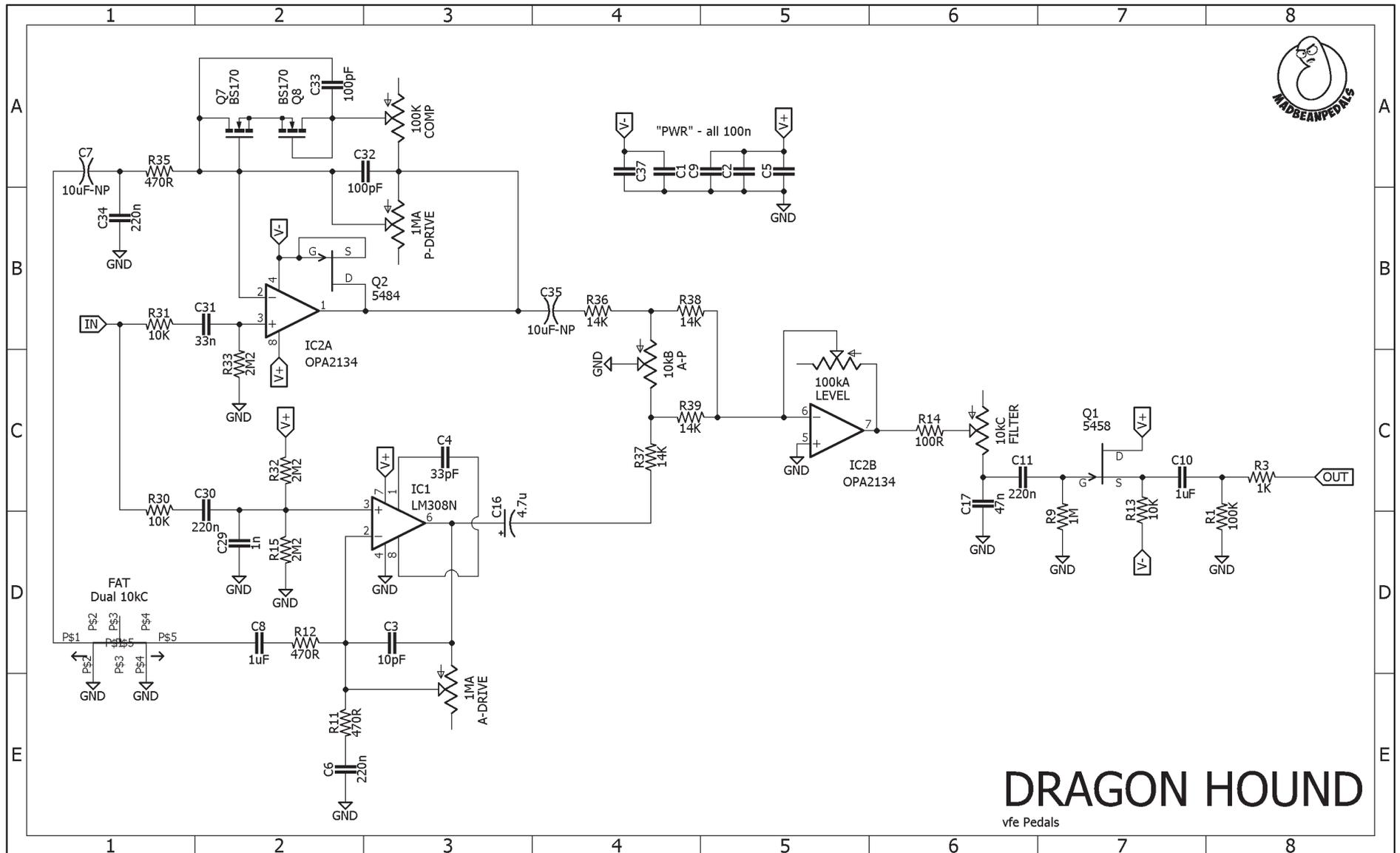
Current Draw: ~33mA
 DC Supply: 9.42v One Spot

How I took these measurements:

- All knobs set to noon.



I left a glob of solder on top of that electrolytic cap so he would have a friend.
Note the metal LM308 for maximum *all the things*.



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