VFE ALPHA DOG TM

FX TYPE: Distortion Images © VFE Project Doc © madbeanpedals 7.31.17 update – see pg.2

2.17" x 2.025" H



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<u>Terms of Use:</u> These projects are intended for DIY use only and may not be used in any commercial Endeavour including the sale of completed pedals or "kits". The PCBs are the actual boards used to build the recently discontinued line of VFE pedals and have been generously provided to the DIY community by VFE for the purpose of DIY only.

Shopping List						
Value	QTY	Туре	Rating	Notes		
470R	1	Metal / Carbon Film	1/4W			
1k	4	Metal / Carbon Film	1/4W			
10k	1	Metal / Carbon Film	1/4W			
1M	1	Metal / Carbon Film	1/4W			
2M2	2	Metal / Carbon Film	1/4W			
10pF	1	MLCC / Ceramic	16v min	2.54mm spacing		
33pF	1	MLCC / Ceramic	16v min	2.54mm spacing		
100pF	1	MLCC / Ceramic	16v min	2.54mm spacing		
1n	2	Film	16v min			
4n7	1	Film	16v min			
100n	2	MLCC / Ceramic	16v min	2.54mm spacing		
220n	3	Film	16v min			
1uF	2	Film	16v min			
4u7	1	Electrolytic	16v min			
1n4148	4					
1n34a	1					
2n5458	1	or, J111				
BS170	1					
LM308	1					
100kA	1	PC Mount Right Angle	16mm			
100kC	1	PC Mount Right Angle	16mm			
10kC	1	PC Mount Right Angle, Plastic Shaft	9mm			
1MD	1	PC Mount Right Angle	16mm	Included w/ PCB		
W20k [C]	1	PC Mount Right Angle, Plastic Shaft	9mm	Included w/ PCB		
W1M [C]	1	PC Mount Right Angle, Plastic Shaft	9mm	Included w/ PCB		

This list is for the audio board only. See the approriate Switching Board doc for the parts needed for the switching system. 11.13.17 update: removed two 470k resistors listed in BOM that are not in the build.

2.54mm MLCC

 10pF:
 http://www.mouser.com/ProductDetail/KEMET/C320C100J1G5TA/?qs=sGAEpiMZZMt3KoXD5rJ2N4ZL0L4F3GD0sicU2qoOz3M%3d

 33pF:
 http://www.mouser.com/ProductDetail/KEMET/C320C330J1G5TA/?qs=sGAEpiMZZMt3KoXD5rJ2NxvTsVQ6hWgqoJLKUAFkWbU%3d

 100pF:
 http://www.mouser.com/ProductDetail/KEMET/C320C101J5G5TA/?qs=sGAEpiMZZMt3KoXD5rJ2NxvTsVQ6hWgqoJLKUAFkWbU%3d

 100pF:
 http://www.mouser.com/ProductDetail/KEMET/C320C101J5G5TA/?qs=sGAEpiMZZMt3KoXD5rJ2N54QGdmtVhtg63%252bt7NgZM00%3d

 100n:
 http://www.mouser.com/Search/ProductDetail.aspx?R=C320C104K5R5TAvirtualkey64600000virtualkey80-C320C104K5R

 You can also just use regular 5mm spaced ceramics or MLCC if you bend the leads inward a bit so don't feel like you have to order the Mouser parts listed above.

100kA, 100kC: <u>http://smallbear-electronics.mybigcommerce.com/alpha-single-gang-16mm-right-angle-pc-mount/</u> 10kC: <u>http://smallbear-electronics.mybigcommerce.com/alpha-single-gang-9mm-right-angle-pc-mount-w-knurled-plastic-shaft/</u> UA308: (metal can sub for LM308): <u>http://smallbear-electronics.mybigcommerce.com/ic-ua308hc/</u> 2n5458: http://smallbear-electronics.mybigcommerce.com/transistor-fet-2n5458/

The 1MD (GAIN) pot is 1MA with 10% tolerance. The 20k (HARD) and 1M (SOFT) pots are W taper with center detent.

July 31st update: All the W1M [C] taper pots are gone and will no longer be included with this project. Use a regular 1MB pot in its place. The W1M [C] pot has a center detent which the 1MB pot does not. Both pots will cover the same tones although the 1MB pot may find similar settings in slightly different positions than the W1M [C]. The 1MD and W20k [C] are still included with the PCBs.

1MB pot: <u>http://smallbear-electronics.mybigcommerce.com/alpha-single-gang-9mm-right-angle-pc-mount-w-knurled-plastic-shaft/</u>

Overview

The Alpha Dog is the VFE take on the ProCo Rat[™]. Like most VFE pedals which are based on tried and true classics, the Alpha Dog offers several excellent tweaks to expand upon the tonal range of distortion available. This includes a "Fat" control for low end rumbles and two custom pots for fine control over the clipping type. The custom pots are W taper with center detents.

Controls

Descriptions from the VFE website: <u>http://vfepedals.com/alpha-dog.html</u>

LEVEL: Simple output volume control. It's technically a passive attenuator, which means it lets you tame the huge signal inside the pedal. Crank it up to unleash the beast and push your amp way past 11.

FILTER: Simple treble cut filter. Turn it up to add bite & grit, pull it back to smooth out the tone or create that dark "woman tone".

GAIN: Sets the gain of the LM308N op amp. More gain means more volume, distortion, and sustain. We had a pot custom-made to give this control a smooth sweep from light-gain overdrive to raging fuzz-stortion.

FAT: Boosts gain and bottom end. Turn this control up to add full-range gain boost, creating a thick modern drive tone.

SOFT: Uses Variable HCC circuitry to set the drive character of the op amp. Counterclockwise = very asymmetrical germanium sweetening. Clockwise = dynamic, smooth mosfet drive. 12:00 = no clipping added.

HARD: Uses Variable HCC circuitry to set the drive character of the post-gain stage. Counterclockwise = dynamic twin stacked silicon distortion. Clockwise = vintage distortion bite with loads of compression and sustain. 12:00 = no clipping added.

Variable HCC circuitry allows you to fine tune the harmonics, compression, and clipping character of your tone.

<u>Notes</u>



There are two parts omitted on this PCB. The resistor shown by the "X" should be left empty. The transistor shown should have a jumper between its two outside legs. Leave the middle leg empty.

The Alpha Dog is a **single supply design**, so you will omit the voltage inverter (7662) and associated components from the Switch Board (see Switching Board documentation for more details).

<u>Wiring</u>



Voltages						
9.42v One Spot						
IC	DC	2n5484	DC			
1	8.59	D	9.13			
2	4.57	S	1.69			
3	4.12	G	0			
4	0	BS170				
5	~	D	4.57			
6	4.57	G	4.57			
7	9.13	S	4.39			
8	4.66					

Build Pic



Note: On this build I used a wired DC jack (my preferred method) and alternate foot-switch location since I am not using batteries.



Alpha Dog http://www.vfepedals.com/



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