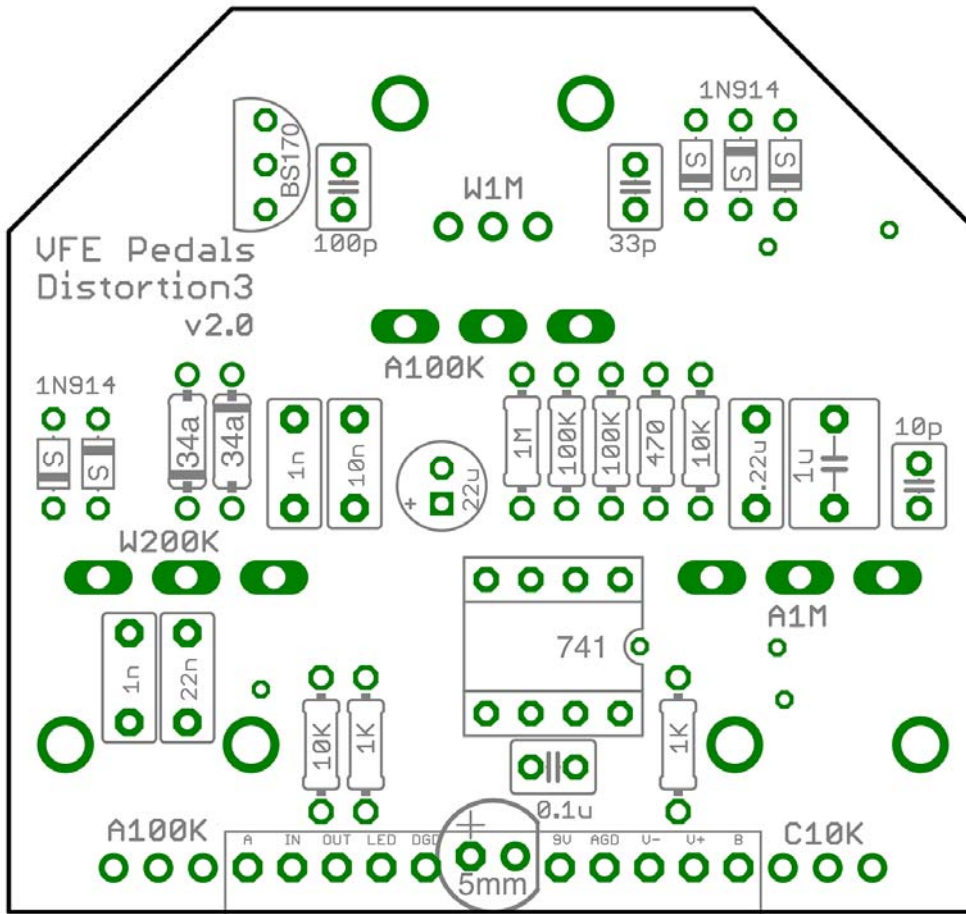


DISTORTION3™

FX TYPE: Distortion
Images © VFE and MBP
Project Doc © madbeanpedals

2.17" W x 2.025" H



Axial parts
5 x 1N914
1 x 470
2 x 1K
2 x 10K
2 x 100K
1 x 1M
2 x 1N34a

2.5mm caps
1 x 10p
1 x 33p
1 x 100p
1 x 0.1u

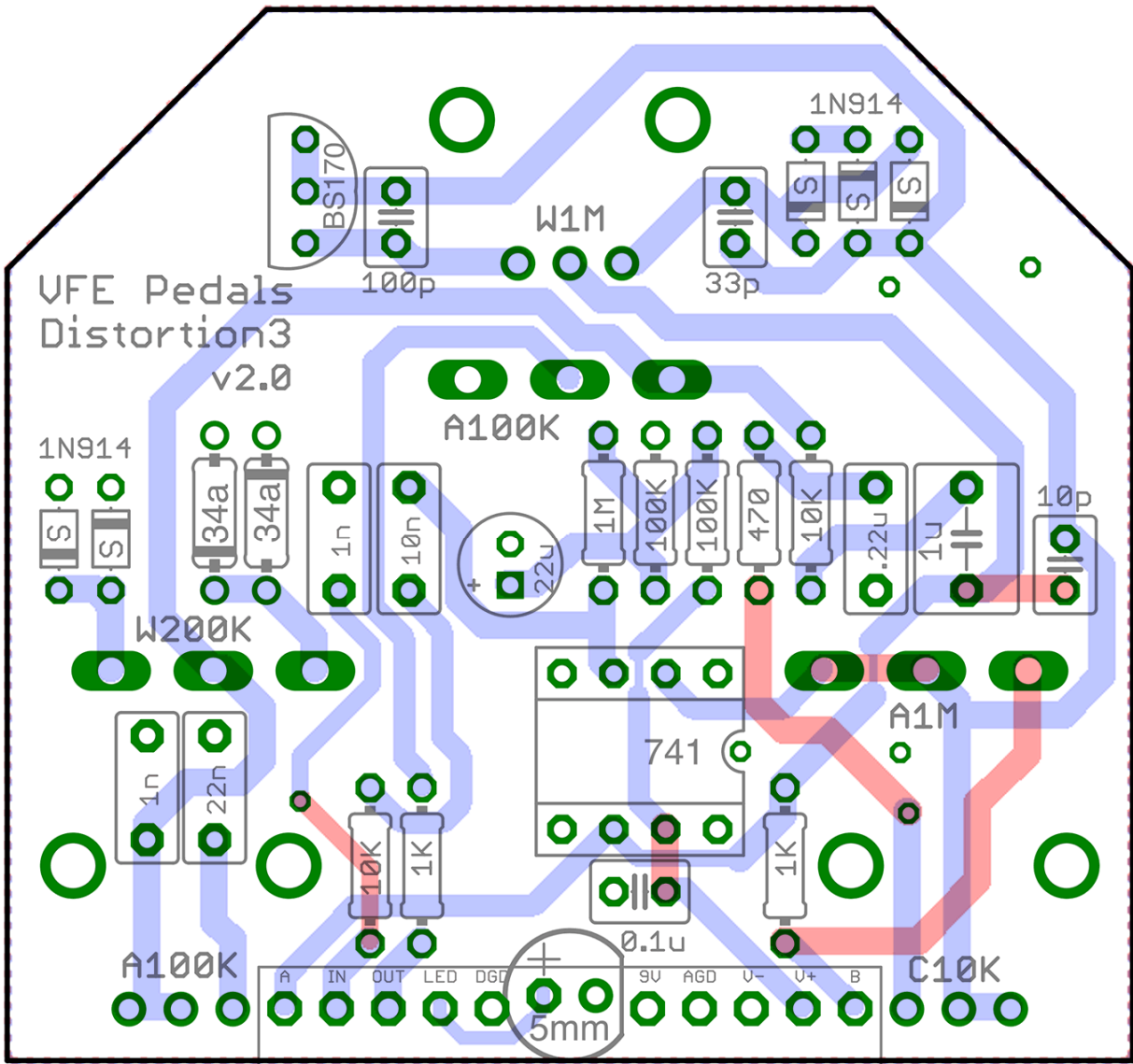
5mm caps
2 x 1n
1 x 10n
1 x 22n
1 x .22u
1 x 1u

Other
1 x 741
1 x BS170
1 x 22u

Note: Use the values listed on the image above – not the values indicated on the silk-screen of the PCB. Some values changed over time in the VFE product cycles.

REMINDER: PETER RUTTER / VFE DOES NOT PROVIDE SUPPORT FOR THESE PROJECTS. PLEASE DO NOT CONTACT HIM FOR QUESTIONS OR TECHNICAL SUPPORT. VISIT THE VFE SECTION OF THE MADBEANPEDALS FORUM FOR QUESTIONS AND ANSWERS!

Terms of Use: 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 | | | | |
|---------------|-------|-------------------------|----------|---------|
| QTY | Value | Type | Rating | Spacing |
| 1 | 470R | Metal / Carbon Film | 1/4W | |
| 2 | 1k | Metal / Carbon Film | 1/4W | |
| 2 | 10k | Metal / Carbon Film | 1/4W | |
| 2 | 100k | Metal / Carbon Film | 1/4W | |
| 1 | 1M | Metal / Carbon Film | 1/4W | |
| 1 | 10pF | MLCC | 16v min. | 2.5mm |
| 1 | 33pF | MLCC | 16v min. | 2.5mm |
| 1 | 100pf | MLCC | 16v min. | 2.5mm |
| 1 | 100n | MLCC | 16v min. | 2.5mm |
| 2 | 1n | Film | 16v min. | 5mm |
| 1 | 10n | Film | 16v min. | 5mm |
| 1 | 22n | Film | 16v min. | 5mm |
| 1 | 220n | Film | 16v min. | 5mm |
| 1 | 1uF | Film | 16v min. | 5mm |
| 1 | 22uF | Electrolytic | 16v min. | |
| 5 | 1n914 | | | |
| 2 | 1n34a | | | |
| 1 | BS170 | | | |
| 1 | LM741 | | | |
| 1 | 10kC | PCB-Mount Plastic Shaft | 9mm | |
| 1 | 100kA | PCB-Mount Plastic Shaft | 9mm | |
| 1 | 1MB | PCB-Mount Plastic Shaft | 9mm | |
| 1 | 100kA | PCB-Mount Right Angle | 16mm | |
| 1 | 200kW | *included w/PCB | 16mm | |
| 1 | 1MA | PCB-Mount Right Angle | 16mm | |

BOM Notes:

- The W1M pot is no longer available. Use the 1MB that is on the Shopping List instead.
- The 10kC pot is a bit hard to come by. You can get them from Tayda (link on next page) but if you don't want to make a special order use 10kB instead.
- The 200kW pot is included with purchase.

This list is for the audio board only. See the [Switching Board](#) doc for the parts needed for the switching system. This effect **does not** use a split-rail power supply.

10pF (MLCC):

<https://www.mouser.com/ProductDetail/KEMET/C320C100J1G5TA?qs=sGAEpiMZZMt3KoXD5rJ2N4ZL0L4F3GD0sicU2qoOz3M%3d>

33pF (MLCC):

<https://www.mouser.com/ProductDetail/KEMET/C320C330J1G5TA?qs=sGAEpiMZZMt3KoXD5rJ2N4ZL0L4F3GD0sicU2qoOz3M%3d>

100n (MLCC):

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

9mm Plastic Shaft, PC Mount (50kA, 100kA):

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

9mm Plastic Shaft, PC Mount (10kA, 100kA, 1MA):

<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>

9mm Plastic Shaft, PC Mount (10kA):

<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 Right Angle, PC Mount (100kA, 1MA):

<http://smallbear-electronics.mybigcommerce.com/alpha-single-gang-16mm-right-angle-pc-mount/>

LM741:

<http://www.smallbear-electronics.mybigcommerce.com/ic-741/>

1n34a:

<http://www.smallbear-electronics.mybigcommerce.com/diode-nos-germanium/>

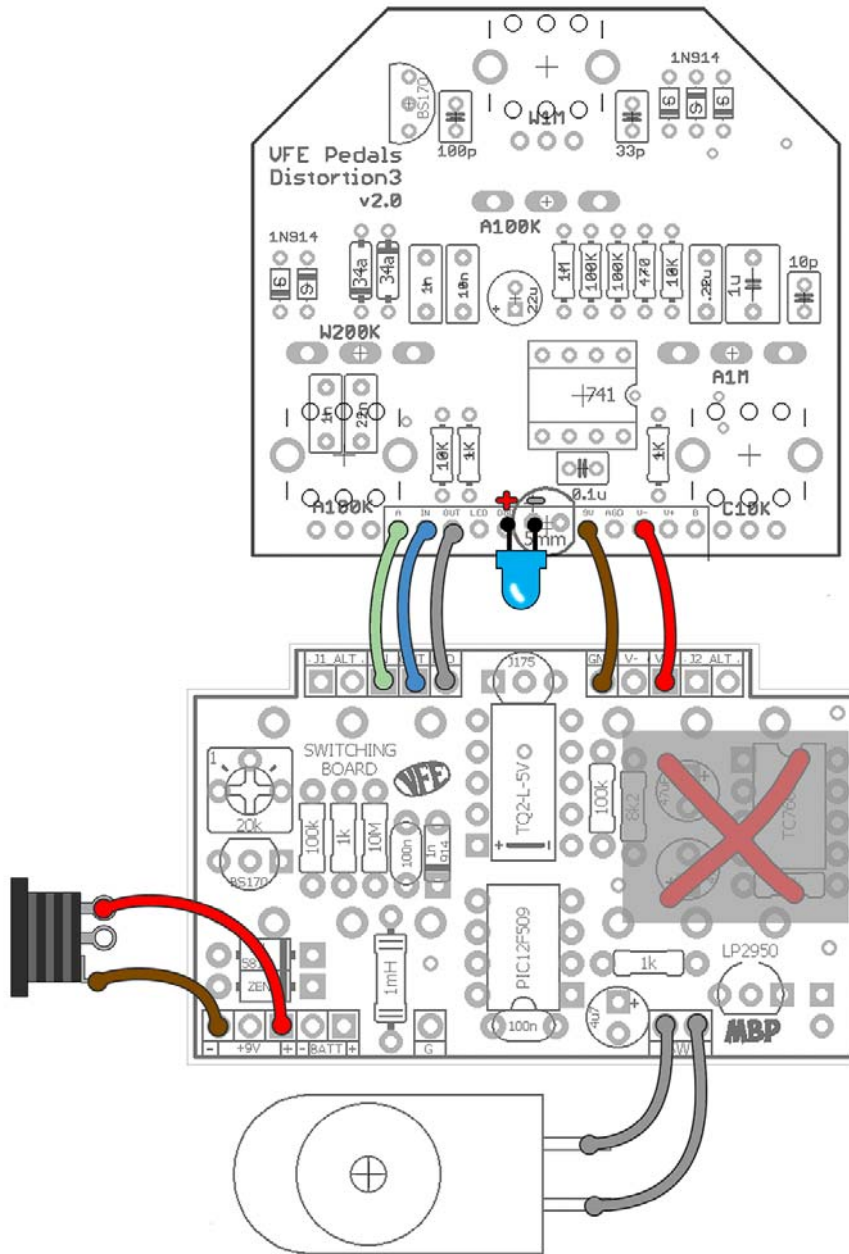
Voltages

9.42vDC One-Spot Power Supply

| 741 | DC |
|-----|--------|
| 1 | 3.6mV |
| 2 | 4.5v |
| 3 | 4.08v |
| 4 | 0 |
| 5 | 3.8mV |
| 6 | 4.52v |
| 7 | 9.12v |
| 8 | ignore |

Current Draw: 10mA

Wiring



For more detailed wiring information and options, please refer to the “v2” Switching Board document

http://www.madbeanpedals.com/projects/VFE/VFE_SwitchingBoard_v2.pdf

Overview

From the VFE Website: One of industry tricks is to use the same circuit board to create "different" effects by changing 1 or 2 components. We're not about that. In fact, we do the opposite. The DISTORTION dirt box gives you 3 pedals in one box: boost, overdrive, and distortion. With 2 variable HCC controls in separate parts of the circuit, and two EQ controls to sculpt your tone, the DISTORTION goes from transparent boost to crunchy overdrive to full-on distortion box with ease.

Controls

Descriptions from the VFE website: <http://vfepedals.com/distortion3.html>

DRIVE: Sets the gain of the circuit. With 15dB more gain on tap than the previous version, you'll find more than ample drive here.

HARD: Uses Variable HCC circuitry to change from saturated germanium distortion (counterclockwise), crunchy silicon overdrive (clockwise), and clean boost (at 12:00).

LEVEL: Sets the output volume. The EQ and amount of compression will greatly affect the overall volume, and this control lets you match unity or boost your amp for extra layers of saturation.

SOFT: Sets the compression and character of the softer, overdrive gain section. Counterclockwise = asymmetrical silicon clipping, clockwise = sweet & smooth mosfet drive, 12:00 = clean boost.

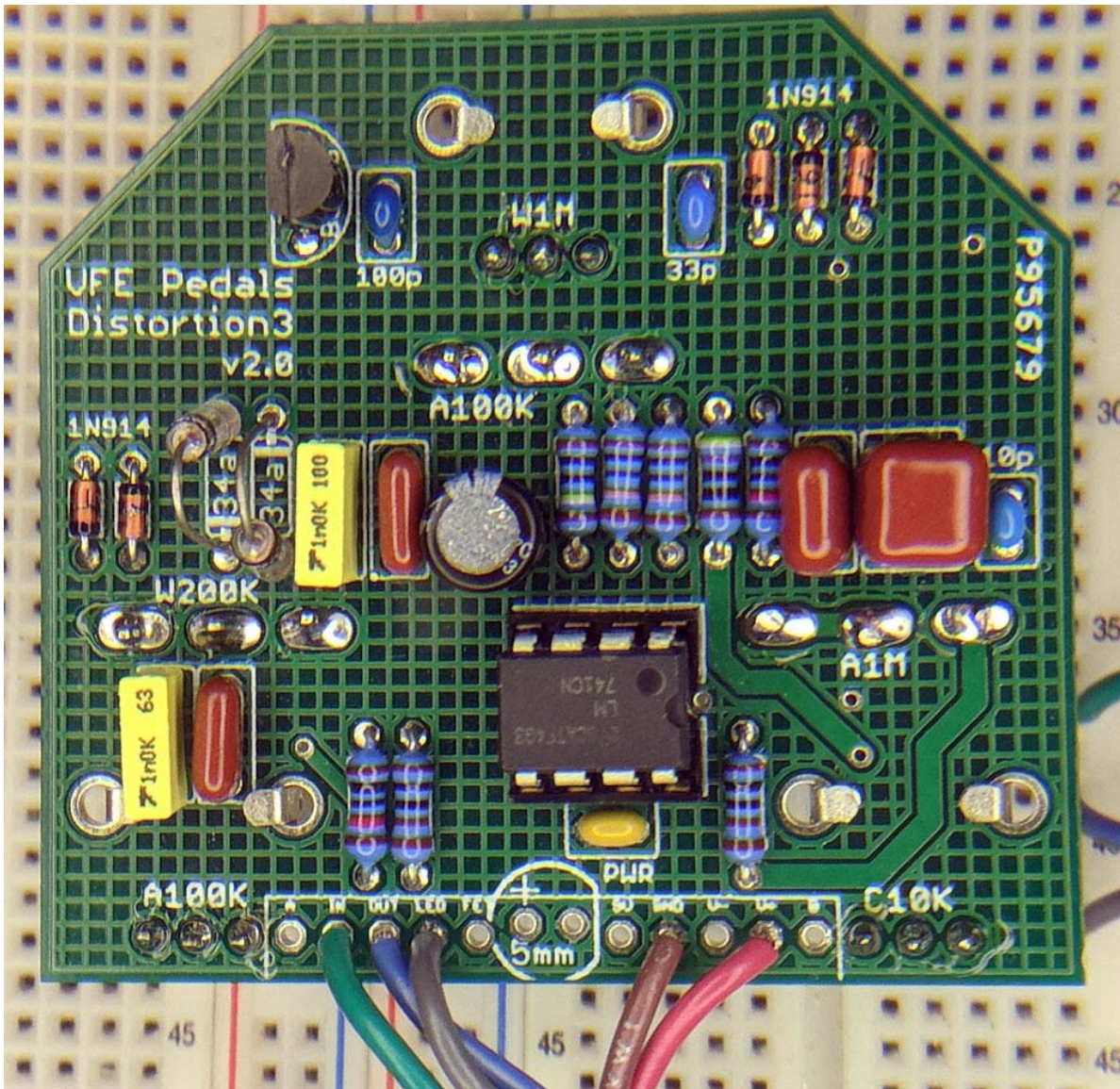
FAT: Turn clockwise to add mid/treble boost to the gain for a tighter bottom end and brighter top-end. Pull back for a full range boost or drive.

FILTER: Pull back to cut the treble and smooth out the grit generated by the gain sections. Crank it up for a transparent top end and a crisp, biting edge to your tone.

Notes

- If you are a fan of the Rat, then you will like the Distortion3. It is rude and unapologetic in all the right ways. The extra diode clipping controls offer all sorts of overdrive to highly saturated distortion tones. I pretty much love this circuit.
- Be very gentle when bending leads on the 1n34a diodes. The glass packaging can break easily!

Build Pic





Distortion³

<http://www.vfepedals.com/>

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