

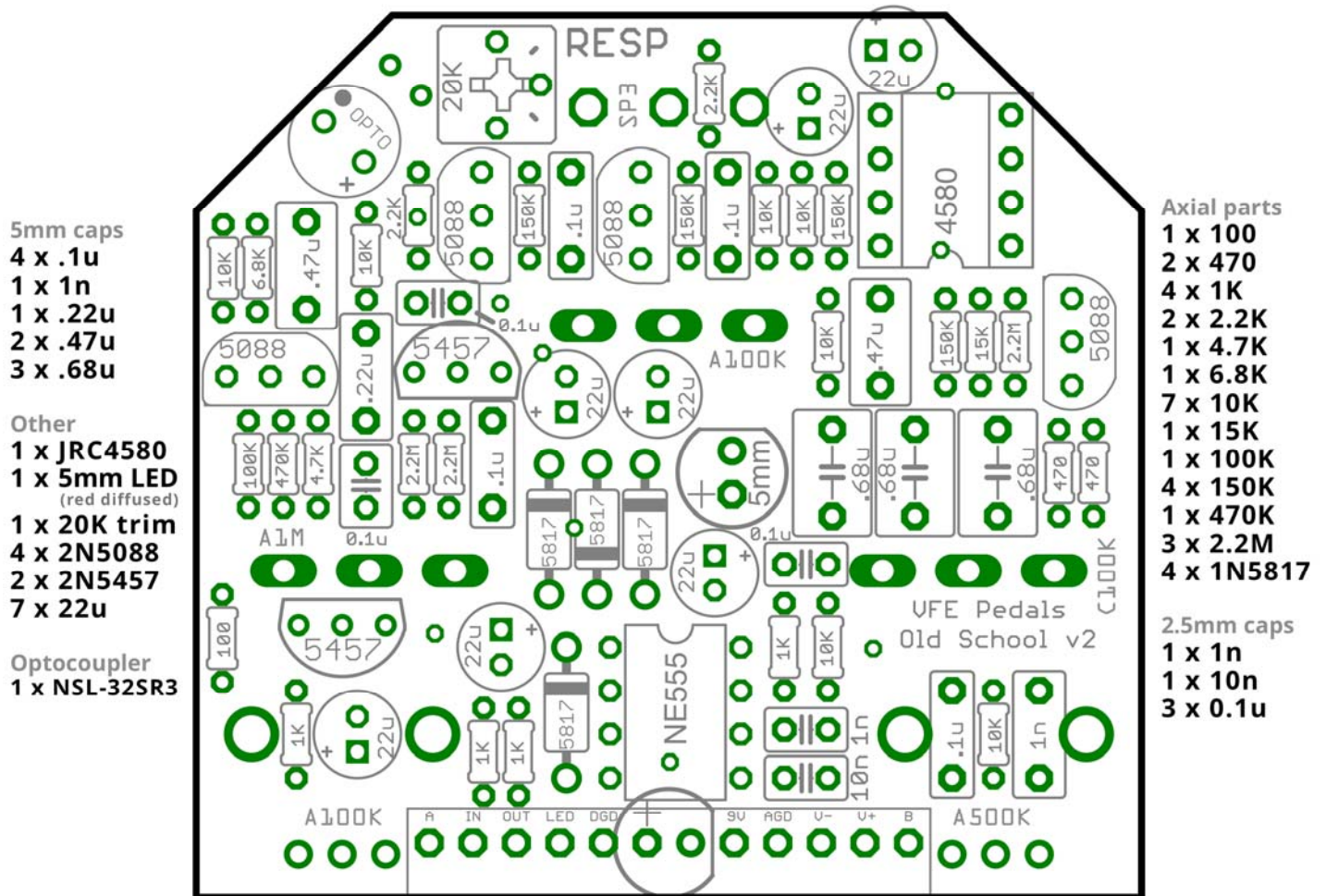
# OLD SCHOOL™

FX TYPE: Tremolo

Images © VFE and MBP

Project Doc © madbeanpedals

2.17" W x 2.025" H



**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.

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**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				
Value	QTY	Type	Rating	Spacing
100R	1	Metal / Carbon Film	1/8W	
470R	2	Metal / Carbon Film	1/8W	
1k	4	Metal / Carbon Film	1/8W	
2k2	2	Metal / Carbon Film	1/8W	
4k7	1	Metal / Carbon Film	1/8W	
6k8	1	Metal / Carbon Film	1/8W	
10k	7	Metal / Carbon Film	1/8W	
15k	1	Metal / Carbon Film	1/8W	
100k	1	Metal / Carbon Film	1/8W	
150k	4	Metal / Carbon Film	1/8W	
470k	1	Metal / Carbon Film	1/8W	
2M2	3	Metal / Carbon Film	1/8W	
1n	1	MLCC	25v min	2.5mm
10n	1	MLCC	25v min	2.5mm
100n	3	MLCC	25v min	2.5mm
1n	1	Film	25v min	5mm
100n	4	Film	25v min	5mm
220n	1	Film	25v min	5mm
470n	2	Film	25v min	5mm
680n	3	Film	25v min	5mm
22uF	7	Electrolytic	25v min	
1N5817	4			
LED	1	Red, Diffused	5mm	
2N5088	4			
2N5457	2			
JRC4580	1			
NE555	1			
Optocoupler	1	NSL-32SR3		
SPDT	1	On/Off/On, Pin Mount		
20k	1	Bourns 3362p		
100kC	1	PC Mount Right Angle	16mm	
1MA	1	PC Mount Right Angle	16mm	
100kA	1	PC Mount Right Angle	16mm	
100kA	1	PC Mount Right Angle, Plastic Shaft	9mm	
500kA	1	PC Mount Right Angle, Plastic Shaft	9mm	

This list is for the audio board only. See the v.2 Switching Board doc for the parts needed for the switching system. This effect does not use the charge pump for split-rail operation on the switching board (it does use the NE555 as a charge pump on the audio board).

### **2.5mm caps, MLCC**

**1n:** <http://www.mouser.com/Search/ProductDetail.aspx?R=C320C102J5G5TAvirtualkey6460000virtualkey80-C320C102J5G>

**10n:**  
<https://www.mouser.com/ProductDetail/KEMET/C320C103J5G5TA91707301/?qs=CMe0I2aI0JXNLw3o58B9Cw%3d%3d>

**100n:**  
<http://www.mouser.com/Search/ProductDetail.aspx?R=C320C104K5R5TAvirtualkey6460000virtualkey80-C320C104K5R>

### **5mm caps, FILM**

**470n:**  
<https://www.mouser.com/ProductDetail/KEMET/R82DC3470Z360J/?qs=sGAEpiMZZMv1cc3ydrPrF0%2fKYujtVgoK1HnXG0zURSM%3d>

**680n:**  
<https://www.mouser.com/ProductDetail/KEMET/R82DC3680AA60J/?qs=sGAEpiMZZMv1cc3ydrPrF0%2fKYujtVgoKNHZCLwjruME%3d>

### **Bourns 20k (3362p):**

<https://www.mouser.com/ProductDetail/Bourns/3362P-1-203LF/?qs=sGAEpiMZZMvyqUB3GLcD7iDNiz%2fNDK0mhkYqCqD12rc%3d>

### **NJM4580D:**

<https://www.mouser.com/ProductDetail/NJR/NJM4580D/?qs=sGAEpiMZZMtOXy69nW9rM1TWnpQq6N5ww%252bQw6dDfEL8%3d>

### **NE555:**

<https://www.mouser.com/ProductDetail/Texas-Instruments/NE555P/?qs=sGAEpiMZZMsG1k5vdNM%2fc6UNh9pCnCAm>

### **NSL32SR3:**

<http://www.smallbear-electronics.mybigcommerce.com/photocoupler-silonex-nsl-32sr3/>

### **SPDT:**

<http://www.smallbear-electronics.mybigcommerce.com/spdt-center-off-pc-mount/>

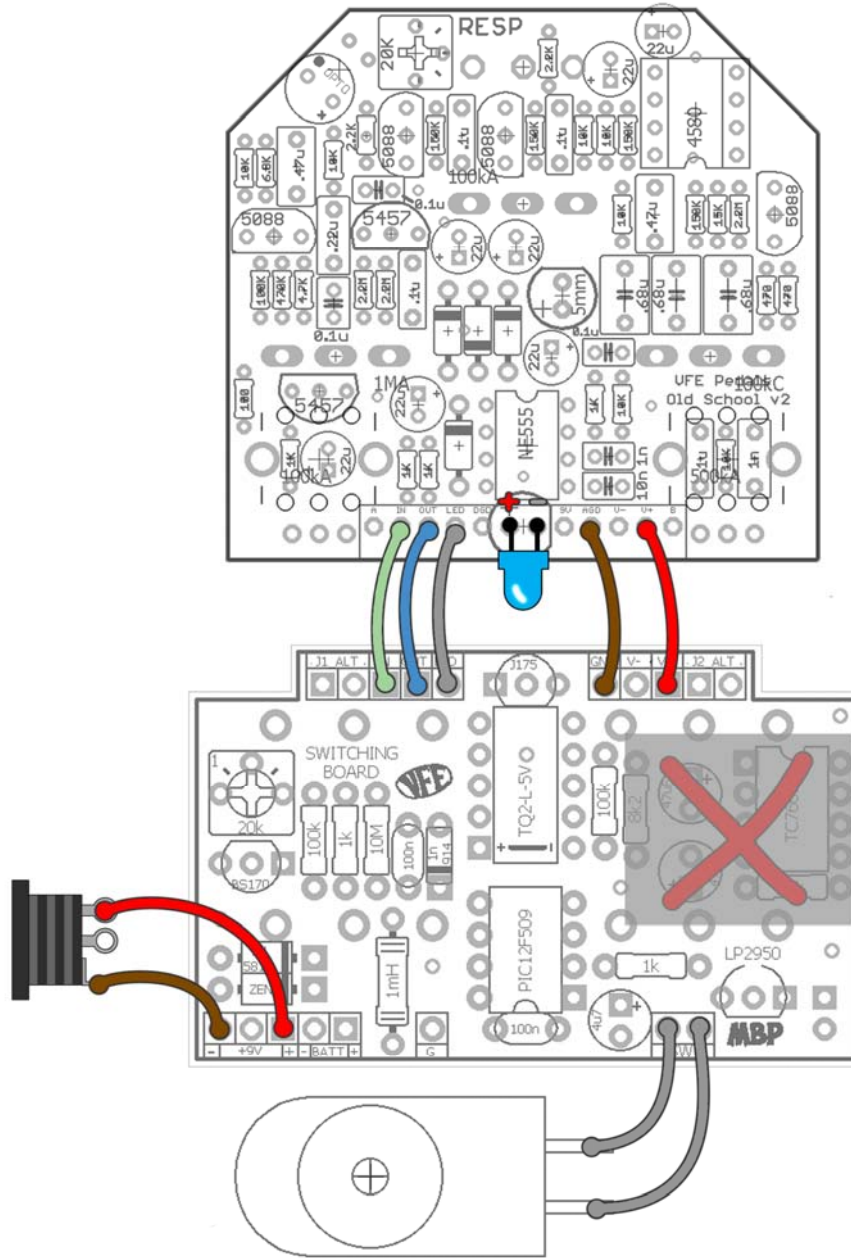
### **9mm Plastic Shaft, PC Mount (100kA, 500kA):**

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

### **16mm Right Angle, PC Mount (100kA, 1MA, 100kC):**

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

# Wiring



For more detailed wiring information and options, please refer to the "v2" Switching Board doc.

## Overview

**From the VFE Website:** Our OLD SCHOOL tremolo pedal recalls the luxurious tremolo sounds of vintage tube amps. Derived from a rich sounding, but feature-limited tremolo circuit from the 1960s, we added extra range to both speed & depth controls. But we did not stop there! We added two unique circuits - one to starve the circuit to add grit & chop, and another that can adjust the speed or depth based on your playing dynamics. And we packed it all in our pedalboard friendly stomptbox!

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## Controls

Descriptions from the VFE website: <http://vfepedals.com/old-school.html>

**SPEED:** Sets the speed of the tremolo effect.

**DEPTH:** Sets the depth of the tremolo effect. Turn all the way counterclockwise to remove the tremolo and use the pedal as a great-sounding clean boost!

**LEVEL:** Sets the output volume of the Old School.

**STARVE:** Turn this control clockwise to add chop & grit to the tremolo effect. This control reduces the headroom of the circuit as you turn it clockwise, yielding a unique, starved tone when fully clockwise. Crackle okay!

**MODE:** Selects the parameter that is controlled by your playing dynamics. S = tremolo accelerates the stronger you play. D = tremolo depth decreases the stronger you play. OFF = playing dynamics have no effect on the tremolo.

**SENS:** Sets the sensitivity of the change of the selected parameter.

**RESP:** This internal trimpot sets the speed at which the parameter changes when your playing dynamics change.

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## Notes

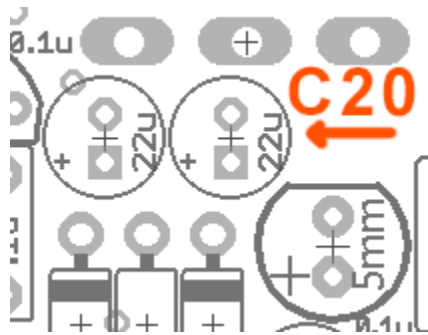
The Old School has roots in the EA tremolo with some terrific additions: a JFET input buffer, pumped-up voltage on the audio path via a 555, an envelope follower tied to an optocoupler to dynamically change speed and depth settings and a pot to change wave shape. It's an excellent sounding trem with plenty of features to keep you happily tweaking.

Starve is an interesting control. Turning it up just slightly takes you from triangle into square wave tremolo. Anywhere beyond that the entire tremolo squashes just as described by VFE. If this isn't to your liking one possible mod would be to use a much lower value pot, say 10kB. That would give you some of the wave shaping range but not as much dynamic squashing.

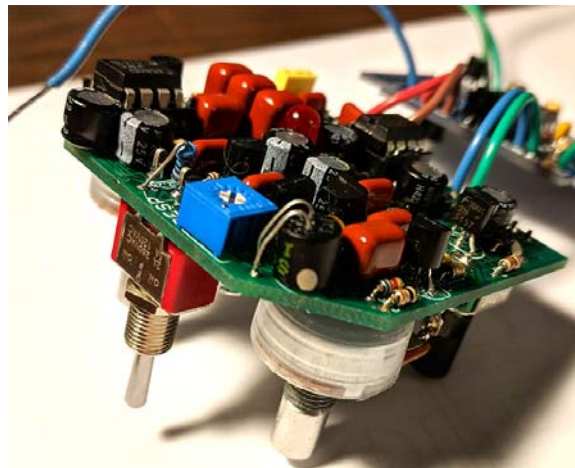
The Depth mode on the envelope control is also pretty unique. The Depth decreases with stronger playing dynamics...not the other way around. This takes some getting used to but offers some interesting playing possibilities.

The RESP (response) trimmer is key to the envelope. Note that turning this trimmer down increases response, not the other way around. I like mine set at about 1/3<sup>rd</sup> up.

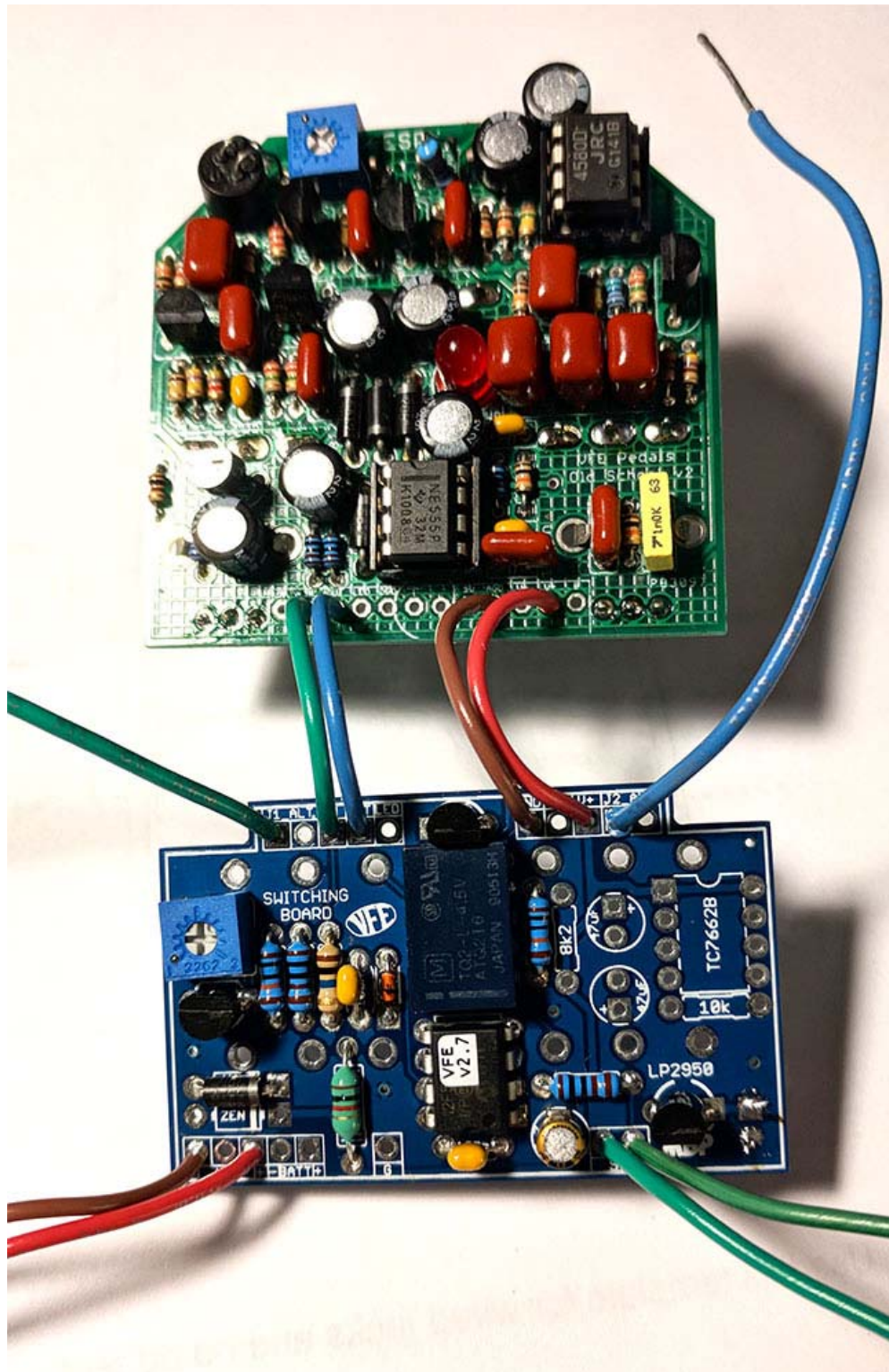
I suggest sticking with the listed optocoupler used for the envelope follower (NSL-32SR3). Rolling your own with an LED and LDR will not work as well since the on-resistance of the NSL is extremely low (around 150R with very fast rise and decay times).



The NE555 is used as a charge pump to create around 22v as the supply on the audio path. A 35v rated 22uF for C20 would be ideal, but if you only have 25v rated caps stick with that. Space is pretty tight in that area.



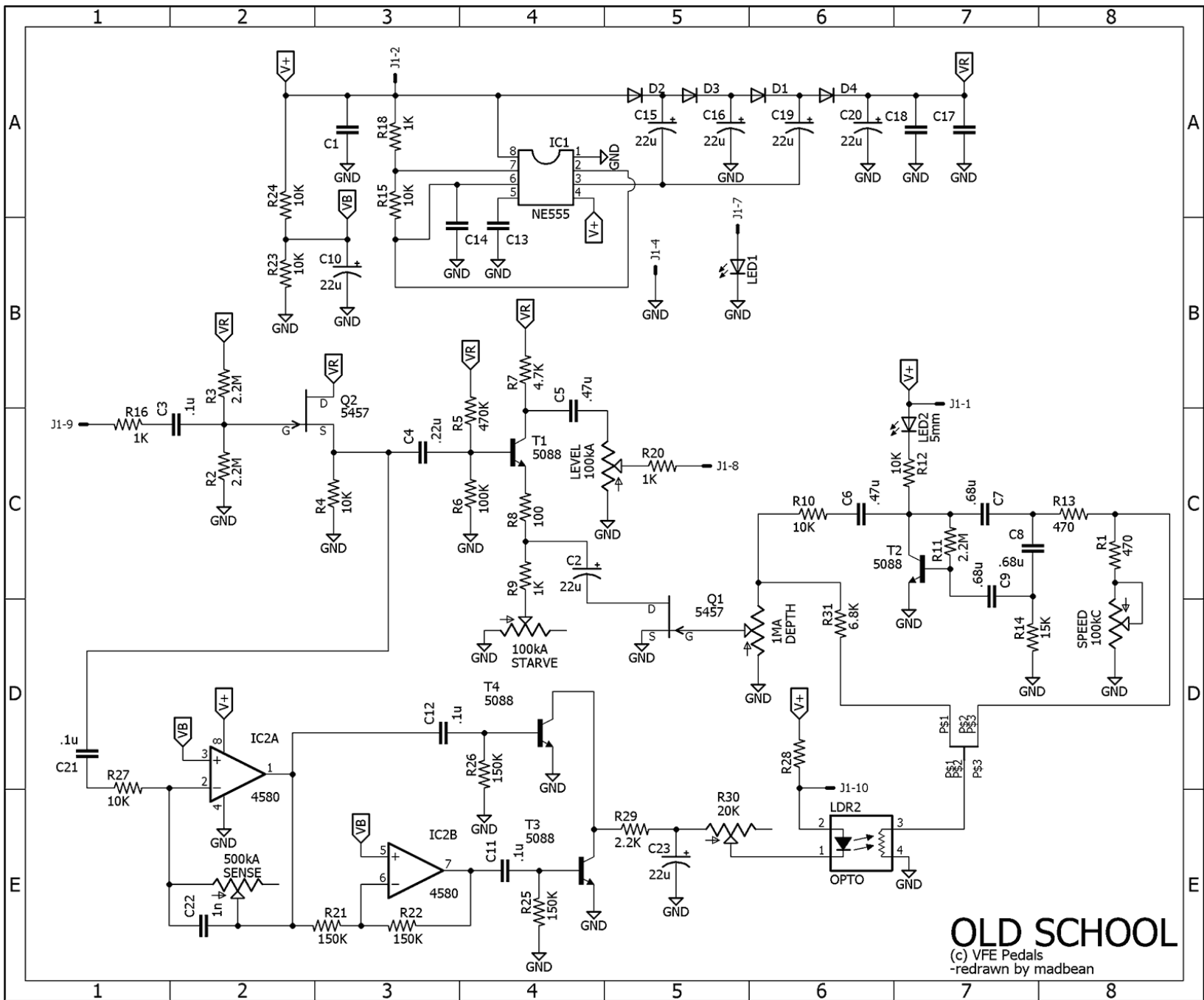
Note how the optocoupler is installed. The dot on the opto corresponds to the dot on the Old School silk screen. In general, all the NSL32 optos have the dot indicating the cathode of the internal LED.



The red LED on the PCB will light up with the speed control, so if you like blinky lights you can wire this LED to the board and make it external on your enclosure for a tempo indicator.







**OLD SCHOOL**  
 (c) VFE Pedals  
 -redrawn by madbean