

DragonbeardJR

FX Type: **DISTORTION**

Build Level: Intermediate

Based On: Bixonic® Expandora™

Last Updated: April 25, 2024 9:29 AM

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Overview

From [Vintage Guitar](#):

“Bixonic introduced the Expandora distortion/fuzz pedal in 1995, and it quickly became popular among guitarists the likes of Billy Gibbons, Joe Satriani, Megadeth, and Bootsy Collins. The original Expandora was loved, but had its drawbacks, such as having its DIP switches inside. It was also a little thin-sounding. In '01 we saw the Expandora II, with more tone control and better low-end response. And at this January's NAMM show, Bixonic introduced the Expandora 2000R, which combines the best of both previous versions and offers a few subtle improvements, like DIP switches on the outside making them of course more accessible, sturdier bypass switch, and a DIP switch to toggle between the old version and newer version with more bass.”

Controls

LVL, GAIN, TONE: Self-explanatory.

OFD: This switches between Overdrive (down), “Forbidden” (center) and Distortion (up) modes. It corresponds to selections made with the DIP switch on the Expandora™.

Further Study:

<https://bixonic-sound.com/pages/story>

<https://pedaltown.nl/en/bixonic-expandora-the-forgotten-japanese-boutique-pedal>

<https://www.diy-stompboxes.com/smfforum/index.php?topic=49782.0>

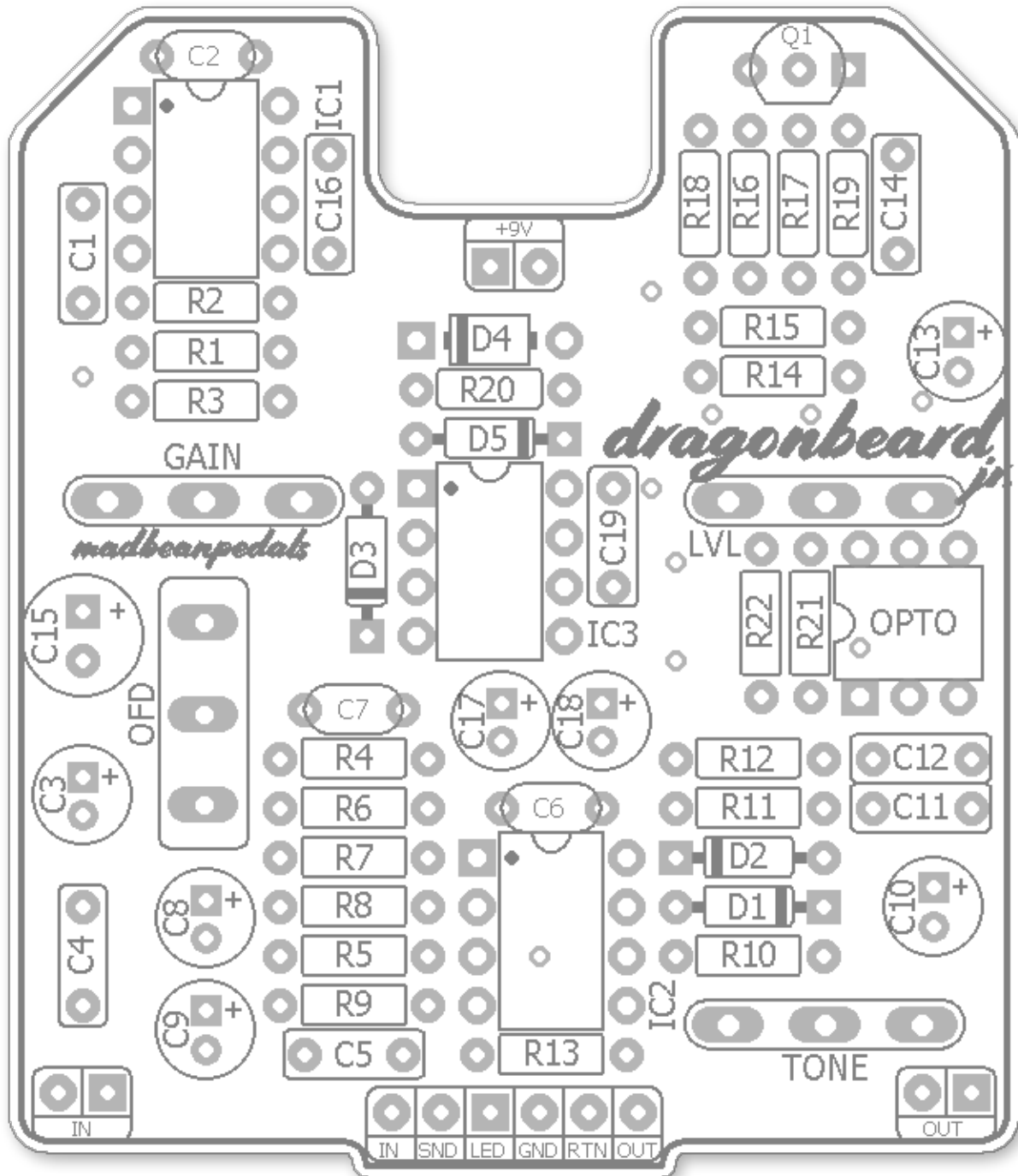
<https://www.diy-stompboxes.com/smfforum/index.php?topic=63346>

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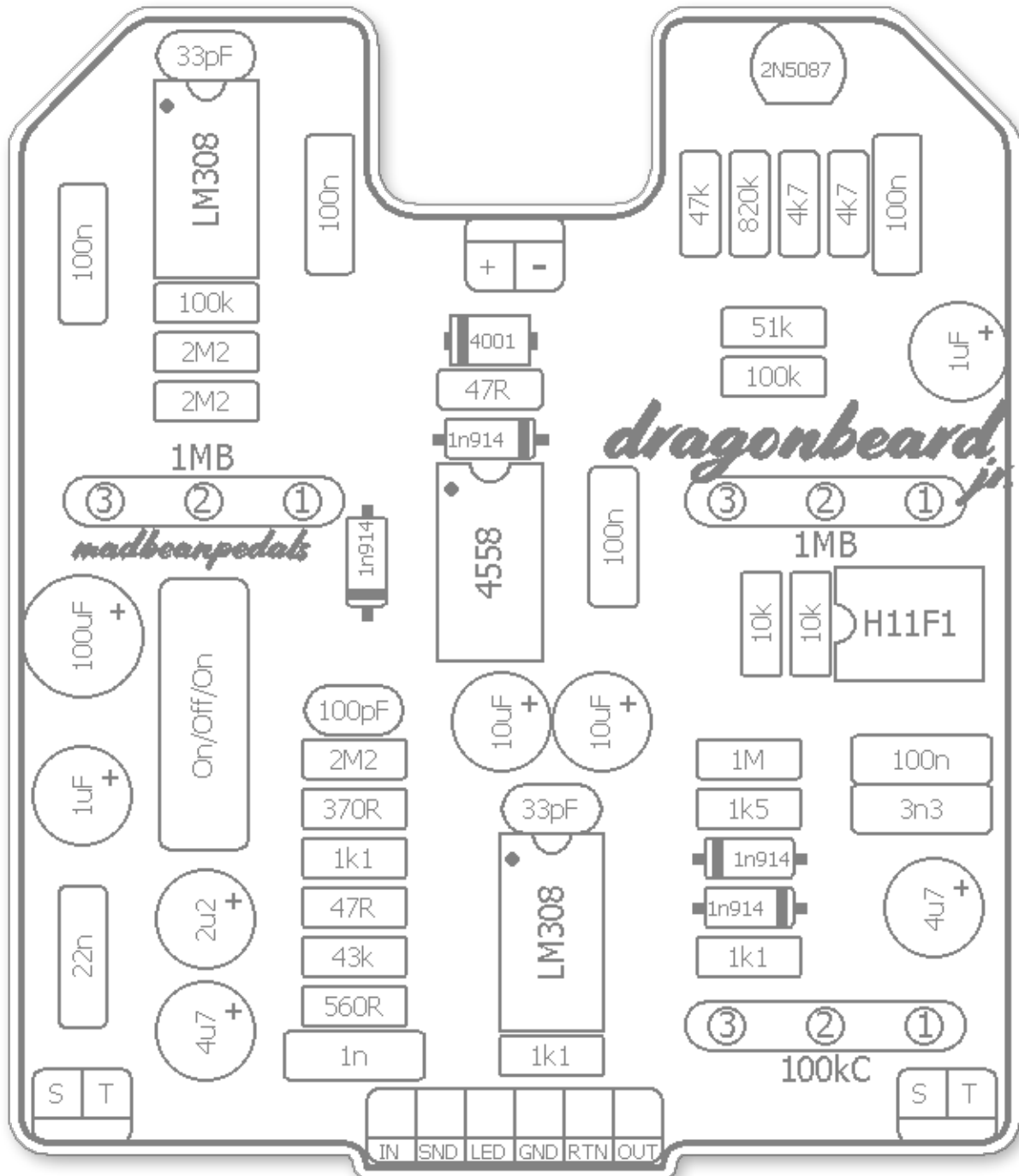
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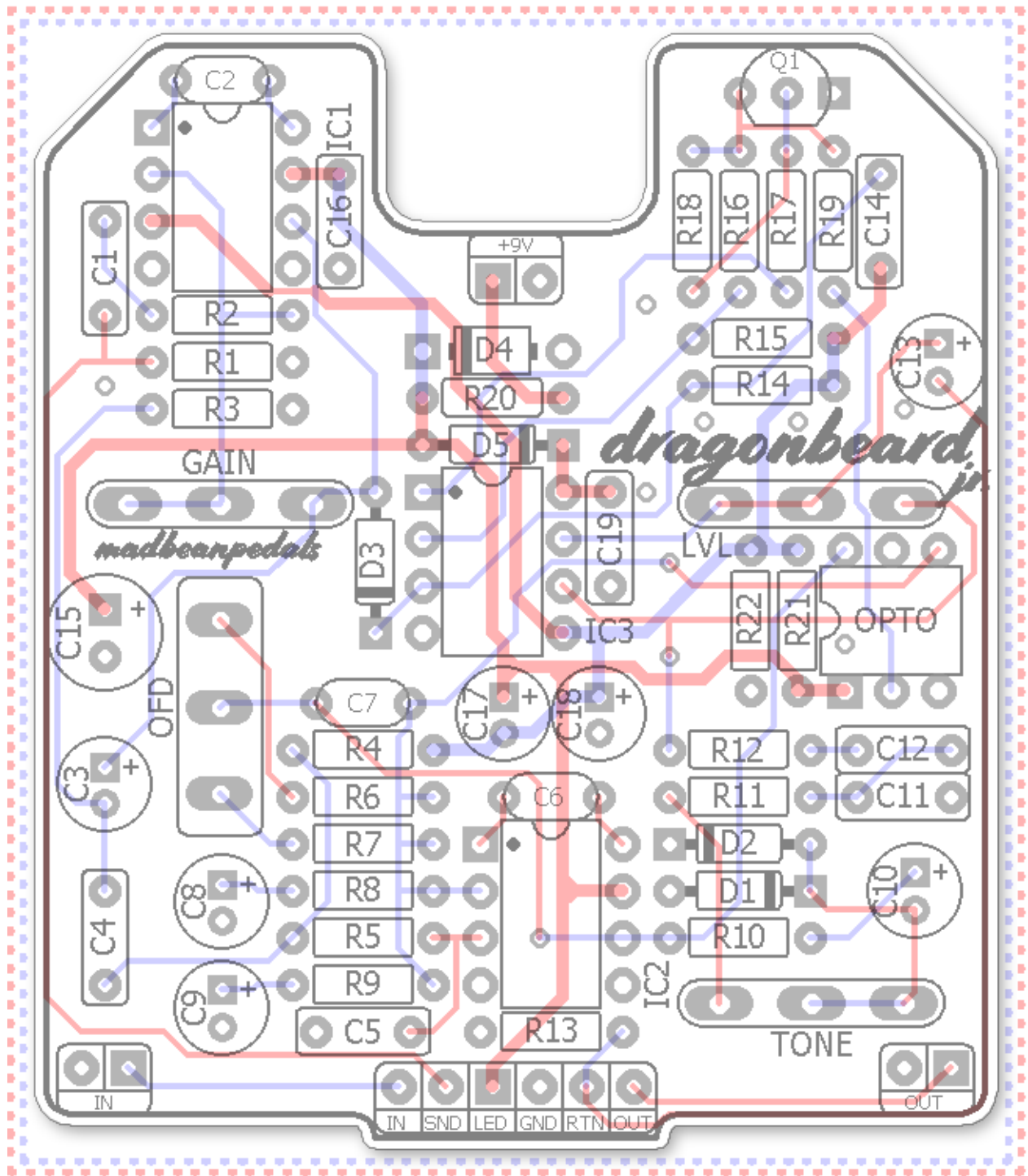
Parts Layout



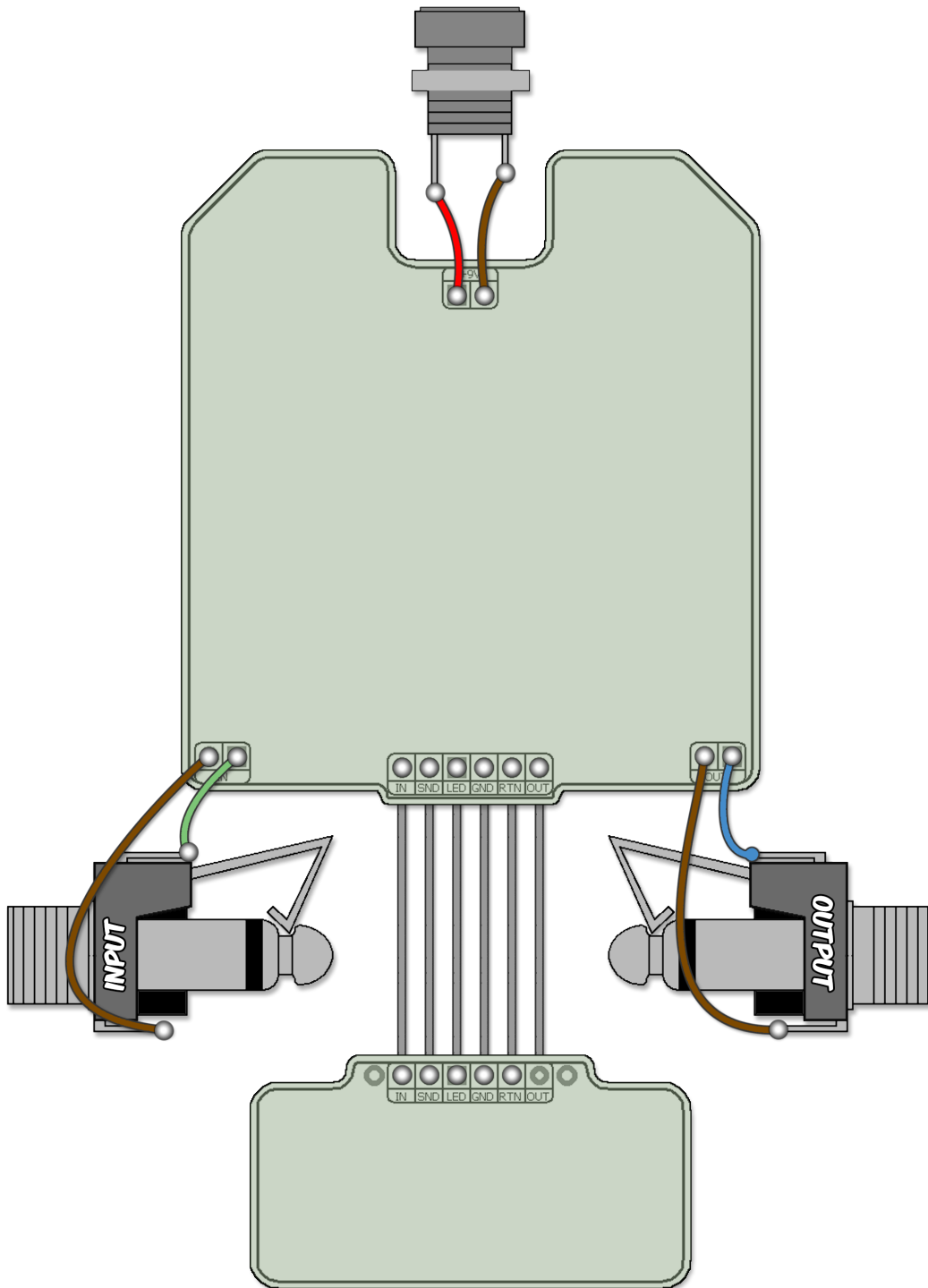
Component Values



Trace Layout



Wiring



Unless otherwise noted, all Standard Series projects have the same wiring regardless of which 3PDT bypass board is used. A 6-pin, 2" ribbon cable is recommended for soldering the connections between the two PCBs.

B.O.M.

Resistors		Caps		Diodes	
R1	2M2	C1	100n	D1	1n914
R2	100k	C2	33pF	D2	1n914
R3	2M2	C3	1uF	D3	1n914
R4	2M2	C4	22n	D4	1n4001
R5	43k	C5	1n	D5	1n914
R6	370R	C6	33pF	Transistors	
R7	1k1	C7	100pF	Q1	2N5087
R8	47R	C8	2u2	Opto	
R9	560R	C9	4u7	OPTO	H11F1
R10	1k1	C10	4u7	IC	
R11	1k5	C11	3n3	IC1	LM308
R12	1M	C12	100n	IC2	LM308
R13	1k1	C13	1uF	IC3	4558
R14	100k	C14	100n	Switches	
R15	51k	C15	100uF	OFD	On/Off/On
R16	820k	C16	100n	Pots	
R17	4k7	C17	10uF	TONE	100kC
R18	47k	C18	10uF	GAIN	1MB
R19	4k7	C19	100n	LVL	1MB
R20	47R				
R21	10k				
R22	10k				

Shopping List

Value	QTY	Type	Rating
47R	2	Carbon / Metal Film	1/4W
370R	1	Carbon / Metal Film	1/4W
560R	1	Carbon / Metal Film	1/4W
1k1	3	Carbon / Metal Film	1/4W
1k5	1	Carbon / Metal Film	1/4W
4k7	2	Carbon / Metal Film	1/4W
10k	2	Carbon / Metal Film	1/4W
43k	1	Carbon / Metal Film	1/4W
47k	1	Carbon / Metal Film	1/4W
51k	1	Carbon / Metal Film	1/4W
100k	2	Carbon / Metal Film	1/4W
820k	1	Carbon / Metal Film	1/4W
1M	1	Carbon / Metal Film	1/4W
2M2	3	Carbon / Metal Film	1/4W
33pF	2	Ceramic / MLCC	16v min.
100pF	1	Ceramic / MLCC	16v min.
1n	1	Film	16v min.
3n3	1	Film	16v min.
22n	1	Film	16v min.
100n	5	Film	16v min.
1uF	2	Electrolytic	16v min.
2u2	1	Electrolytic	16v min.
4u7	2	Electrolytic	16v min.
10uF	2	Electrolytic	16v min.
100uF	1	Electrolytic	16v min.
1n4001	1		
1n914	4		
H11F1	1	Mouser Link	
2N5087	1		
LM308	2	see notes	
4558	1		
SPDT	1	On/Off/On, Solder Lug or PCB Pin	
100kC	1	PCB Right Angle	16mm
1MB	2	PCB Right Angle	16mm

Additional Hardware

- (1) 1590B enclosure
- (2) Lumberg 1/4" Compact mono jacks
- (1) Slim 2.1mm DC jack
- (1) Standard 3PDT footswitch
- (1) 5mm LED

Build Notes

308HC version: <https://smallbear-electronics.mybigcommerce.com/ic-ua308hc/>

308AH version: <https://smallbear-electronics.mybigcommerce.com/ic-lm308ah/>

OP07 (308 sub): <https://smallbear-electronics.mybigcommerce.com/ic-op07dp/>

H11F1M: <https://www.mouser.com/ProductDetail/512-H11F1M>

- The 308 is the preferred IC but there's nothing wrong with the OP07. Both are very comparable. IMO, the 308 has just a little bit more character to it. YMMV.
- Note: The H11F1 is drawn as a photocell based optocoupler, but it is actually a mosfet opto (I just haven't put in the correct drawing for my Eagle library). These are becoming expensive and hard to come by now. Later version use the Sharp PC419, which unfortunately surface mount only. It may be possible to sub the PC419 with a daughter board, but I will leave that to the builder as I have not tried it as a sub. Note the pinout of the H11F1 if you try a sub.
- I recommend soldering in the SPDT switch before you populate C15 and C3 to give yourself plenty of room to maneuver the soldering iron.

Circuit Voltages

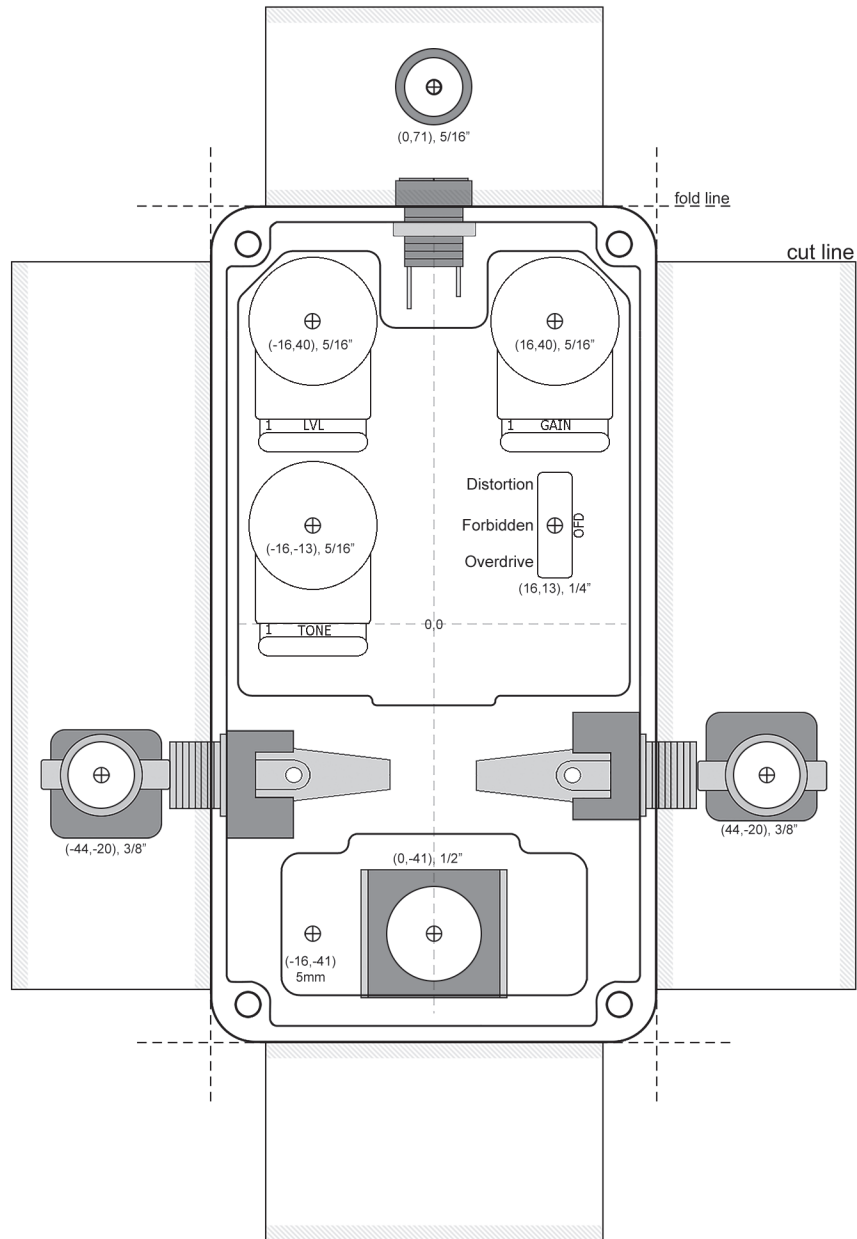
IC1	LM308	IC2	LM308	IC3	4558	Q1	2n5087
1	8.66	1	8.59	1	3.95	C	0.00
2	4.63	2	4.57	2	4.61	B	4.03
3	4.56	3	3.80	3	4.53	E	4.63
4	0.00	4	0.00	4	0.00	OPTO	H11F1
5	37mV	5	7mV	5	4.57	1	9.16
6	4.58	6	4.56	6	4.67	2	7.85
7	9.16	7	9.16	7	4.56	3	90mV
8	4.64	8	4.65	8	8.47	4	4.56
						5	4.1
						6	4.56

9.44vDC One Spot supply
 Current Draw: ~6mA
 Knobs @ 50%, switch down

1590B Drill Template

Coordinates are denoted in (X,Y), drill size format starting from the center (0,0) location of the enclosure.

[Link to Tayda Standard Series master drill template](#)

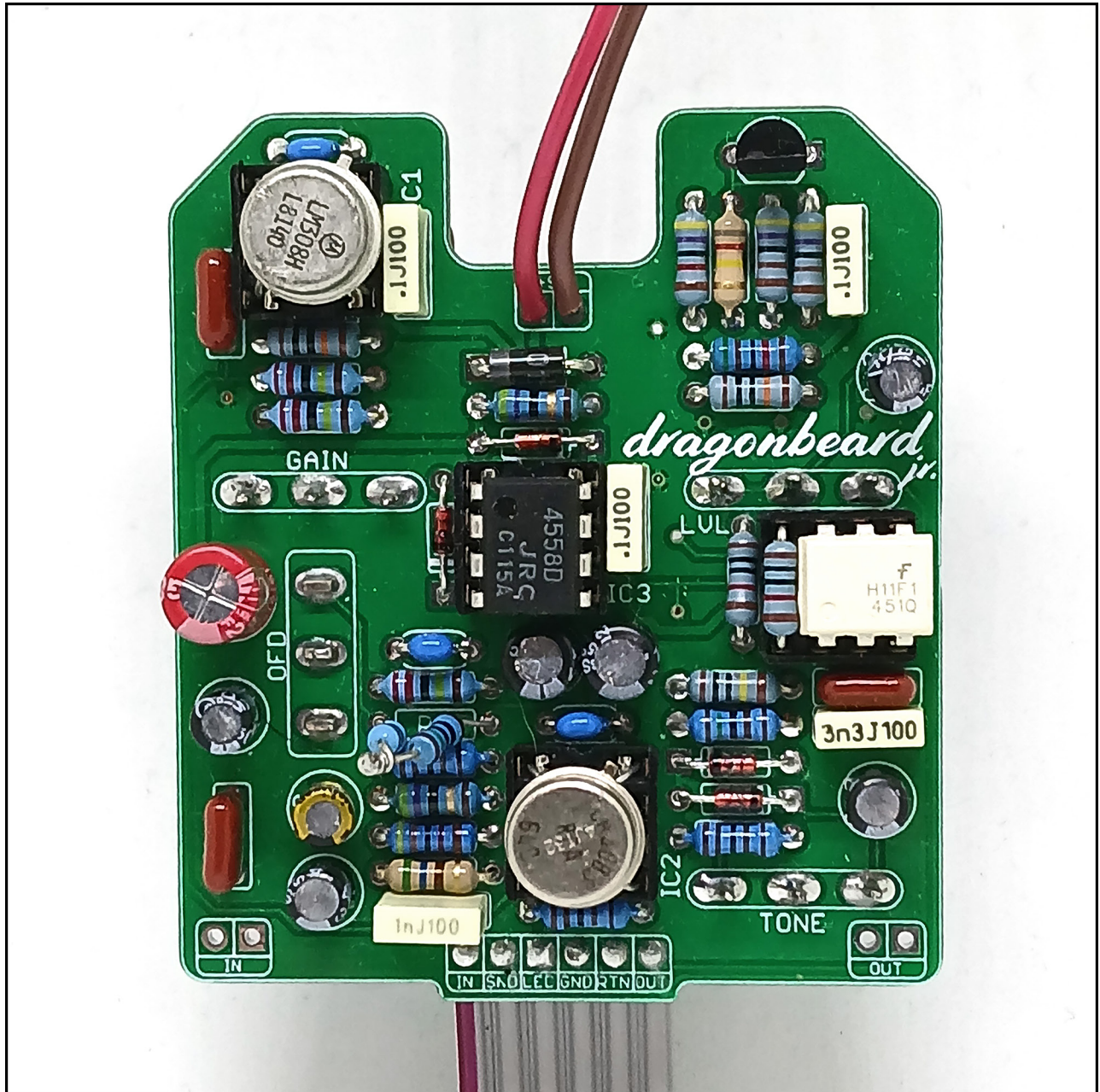


Hardware

1590B enclosure
16mm pots
Lumberg 1/4" Compact mono jacks
Slim 2.1mm DC jack
Standard 3PDT footswitch
5mm LED

NOTE: Different 1/4" and DC jack styles may require different sized drill holes.

Build Pic



Schematic

