SLOWLORIS2020

FX TYPE: Distortion
Based on the ProCo® Rat™
Enclosure Size: 1590B, 1590B2, 125B
“Softie” compatibility: Softie1&2

Overview

NEW for the 2020 version: a new layout that allows for several enclosure types. Changed to three sets of clipping diodes instead of two.

Much like the venerated Ibanez® Tube Screamer™ the Rat™ needs little introduction. It is part of the “holy trinity” of dirt pedals that nearly every rock guitar player has owned or played through at some point (the other being the Big Muff™). But, unlike the smooth and refined sound of the Tube Screamer™, the Rat™ is more like a distant uncle…you know, the one that always smells like stale cigars and bottom-of-the-well whiskey; rude, abrasive and sometimes just plain ol’ mean.

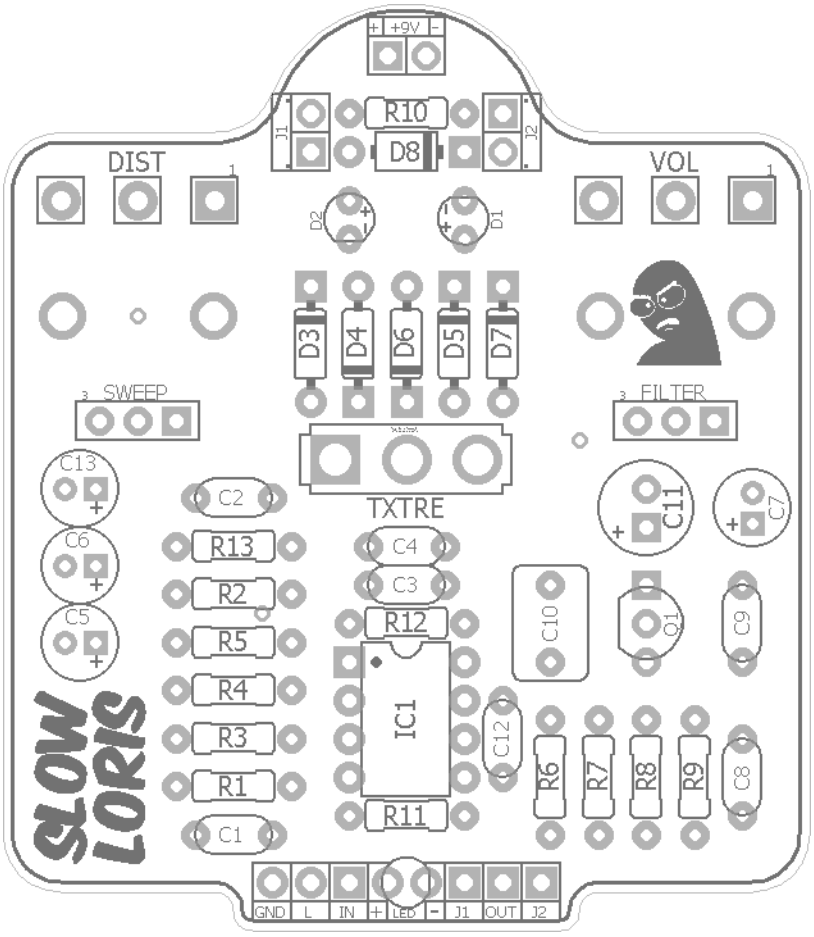
While the Rat™ lacks smoothness (and pushes the boundaries on acceptable signal to noise ratio) it makes up for it with lots of character. It is a textured distortion; like putting a fine layer of gritty sand over your guitar tone. One can almost imagine ripping fat riffs while playing “Round and Round” at your local bar gig, flipping your long mane of hair while the ladies swoon over your tiger striped spandex. Well, maybe that’s just me.

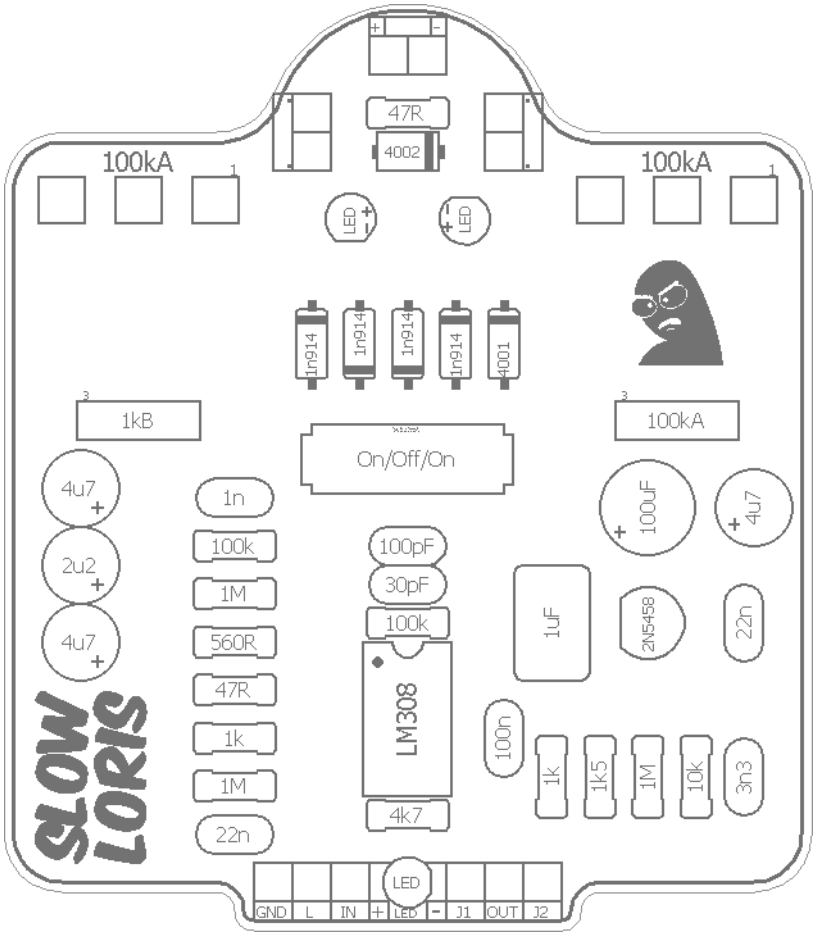
Anyway, the Slow Loris is a clone of the Rat™ with a couple extra mods. The first is an additional knob labeled “Sweep”. This is a 1k pot in series with R4 (also known as the “Ruetz mod”). The Sweep pot lets you change the clipping frequency of the gain stage. It is most useful at lower gain settings and will darken up the tone a bit as you turn it up. Fully counter-clockwise is the stock Rat™ sound. The second mod is a switch that lets you select between three sets of clipping diodes: stock 1n914 (left), LED (middle) and asymmetrical (right). The biggest difference is between the middle position and outer two. The stock and asymmetrical are closer, with the asym mode being slightly louder and, well, slightly asymmetrical.

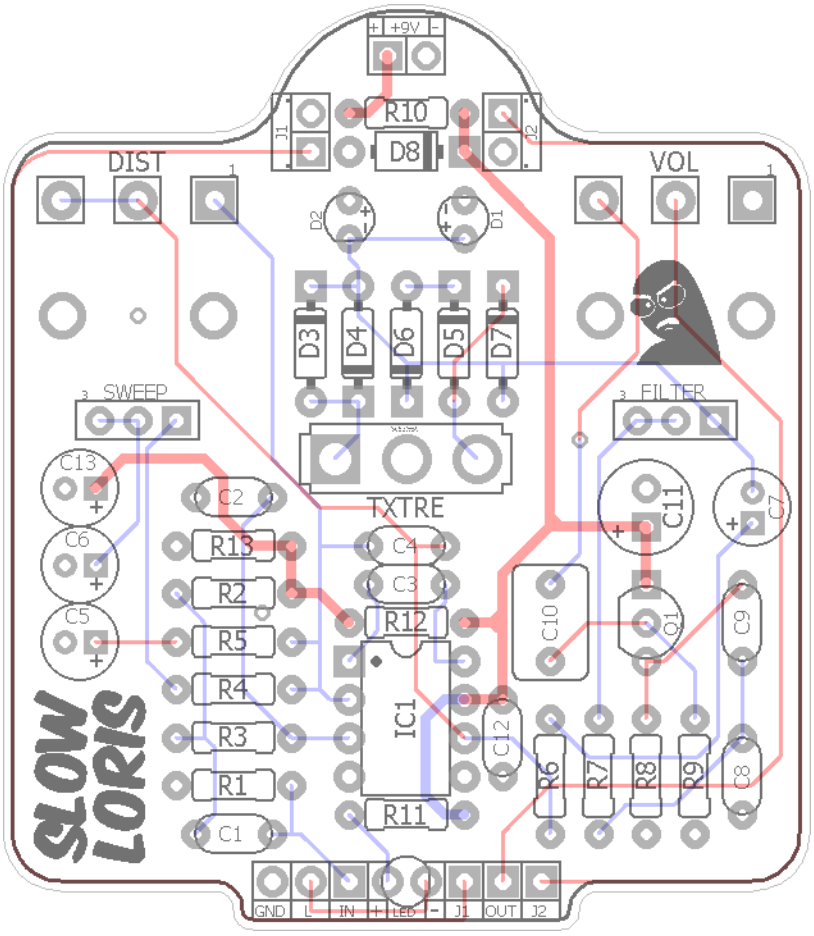
Controls

- **VOL -** Total Output.
- **DIST -** Total distortion.
- **FILTER -** Reduces high end as it is turned clockwise.
- **SWEEP -** Adds lower clipped frequencies as it is turned clockwise. This is most noticeable when the DIST control is below 50%.
- **TXTRE** - Center off toggle that goes between stock, LED and asymmetrical clipping.

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.


+9V
R10
D8
J1
J2
DIST
VOL
D2
D1
D3
D4
D6
D5
D7
SWEEP
FILTER
TXTRE
C13
C6
C5
C2
R13
R2
R5
R4
R3
R1
C1
C4
C3
R12
IC1
R11
C10
C12
Q1
C11
C7
C9
C8
R6
R7
R8
R9
SLOW LORIS
GND
L
IN
+
LED
-
J1
OUT
J2


47R
4002
100kA
100kA
LED
LED
1n914
1n914
1n914
1n914
4001
1kB
100kA
On/Off/On
4u7
2u2
4u7
1n
100k
1M
560R
47R
1k
1M
22n
100pF
30pF
100k
LM308
4k7
1uF
100uF
4u7
2N5458
22n
100n
1k
1k5
1M
10k
3n3
SLOW LORIS
LED
GND
L
IN
+
LED
-
J1
OUT
J2


+9V
R10
D8
J1
J2
DIST
VOL
D2
D1
D3
D4
D6
D5
D7
SWEEP
FILTER
C13
C2
TXTRE
C11
C7
C6
R13
C4
R2
C3
C5
R12
C10
Q1
C9
R5
R4
IC1
C12
R6
R7
R8
R9
C8
R3
R1
R11
C1
SLOW LORIS
GND
IN
LED
J1
OUT
J2

Resistors		Caps		Diodes	
R1	1M	C1	22n	D1 - D2	LED
R2	1M	C2	1n	D3 - D6	1n914
R3	1k	C3	30pF	D7	1N4001
R4	47R	C4	100pF	D8	1N4002
R5	560R	C5	4u7	Transistor	
R6	1k	C6	2u2	Q1	2N5458
R7	1k5	C7	4u7	IC	
R8	1M	C8	3n3	IC1	LM308
R9	10k	C9	22n	Switch	
R10	47R	C10	1uf	TXTRE	SPDT
R11	4k7	C11	100uF	Pots	
R12	100k	C12	100n	DIST	100kA
R13	100k	C13	4u7	FILTER	100kA
				SWEEP	1kB
				VOL	100kA

Value	Qty	Type	Rating
47R	2	Metal / Carbon Film	1/4W
560R	1	Metal / Carbon Film	1/4W
1k	2	Metal / Carbon Film	1/4W
1k5	1	Metal / Carbon Film	1/4W
4k7	1	Metal / Carbon Film	1/4W
10k	1	Metal / Carbon Film	1/4W
100k	2	Metal / Carbon Film	1/4W
1M	3	Metal / Carbon Film	1/4W
30pF	1	Ceramic / MLCC	
100pF	1	Ceramic / MLCC	
1n	1	Film	
3n3	1	Film	
22n	2	Film	
100n	1	Film	
1uf	1	Film	
2u2	1	Electrolytic	
4u7	3	Electrolytic	
100uF	1	Electrolytic	
LED	2	Red, Diffused	3 or 5mm
1n914	5		
1N4001	1		
1N4002	1	or, 1N4001	
2N5458	1	or, 2N5457	
LM308	1		
SPDT	1	On/Off/On	
100kA	1	PCB Mount, Right Anlge, Plastic Shaft	9mm
1kB	1	PCB Mount, Right Anlge, Plastic Shaft	9mm
100kA	2	PCB Mount, Right Angle	16mm

LM308:
http://smallbear-electronics.mybigcommerce.com/ic-ua308hc/

- There are cheaper sources around for the non-metal can version of the 308. eBay, etc. The OP07 is a popular alternative: https://www.mouser.com/Semiconductors/Amplifier-ICs/Precision-Amplifiers/_/N-9rtls?P=1z0z63x&Keyword=OP07%3a&FS=True

2n5458:
http://smallbear-electronics.mybigcommerce.com/transistor-fet-2n5458/

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

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

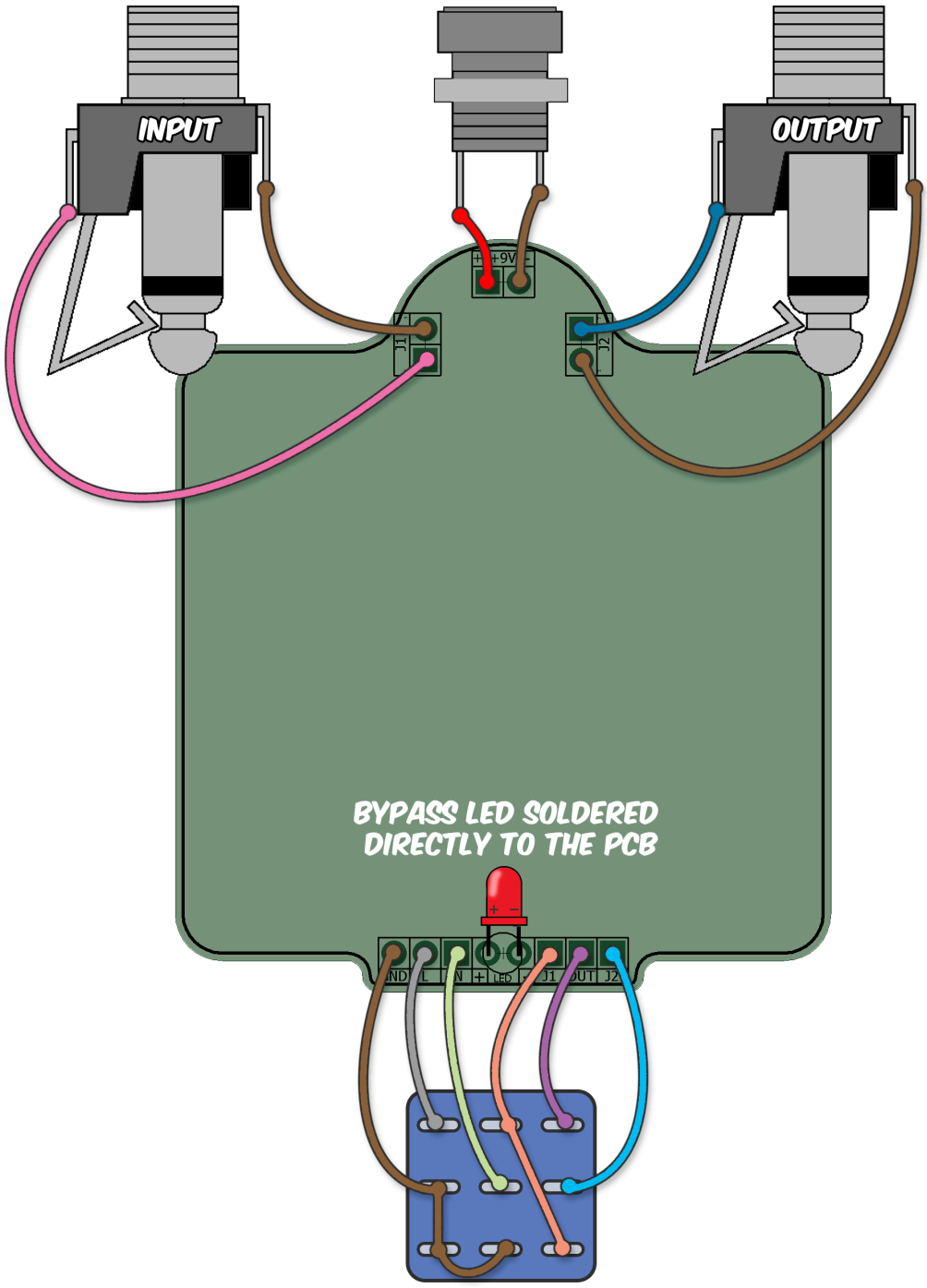
On/Off/On Toggle:
http://smallbear-electronics.mybigcommerce.com/spdt-short-lever-center-off/

Thinline DC Jack:
http://smallbear-electronics.mybigcommerce.com/dc-power-jack-all-plastic-unswitched-2-1-mm/

Enclosed Mono:
http://smallbear-electronics.mybigcommerce.com/1-4-in-mono-enclosed-jack/
http://smallbear-electronics.mybigcommerce.com/1-4-in-mono-enclosed-switchcraft-111x/

Lumberg Mono:
http://smallbear-electronics.mybigcommerce.com/lumberg-1-4-compact-shrouded-mono-jack/

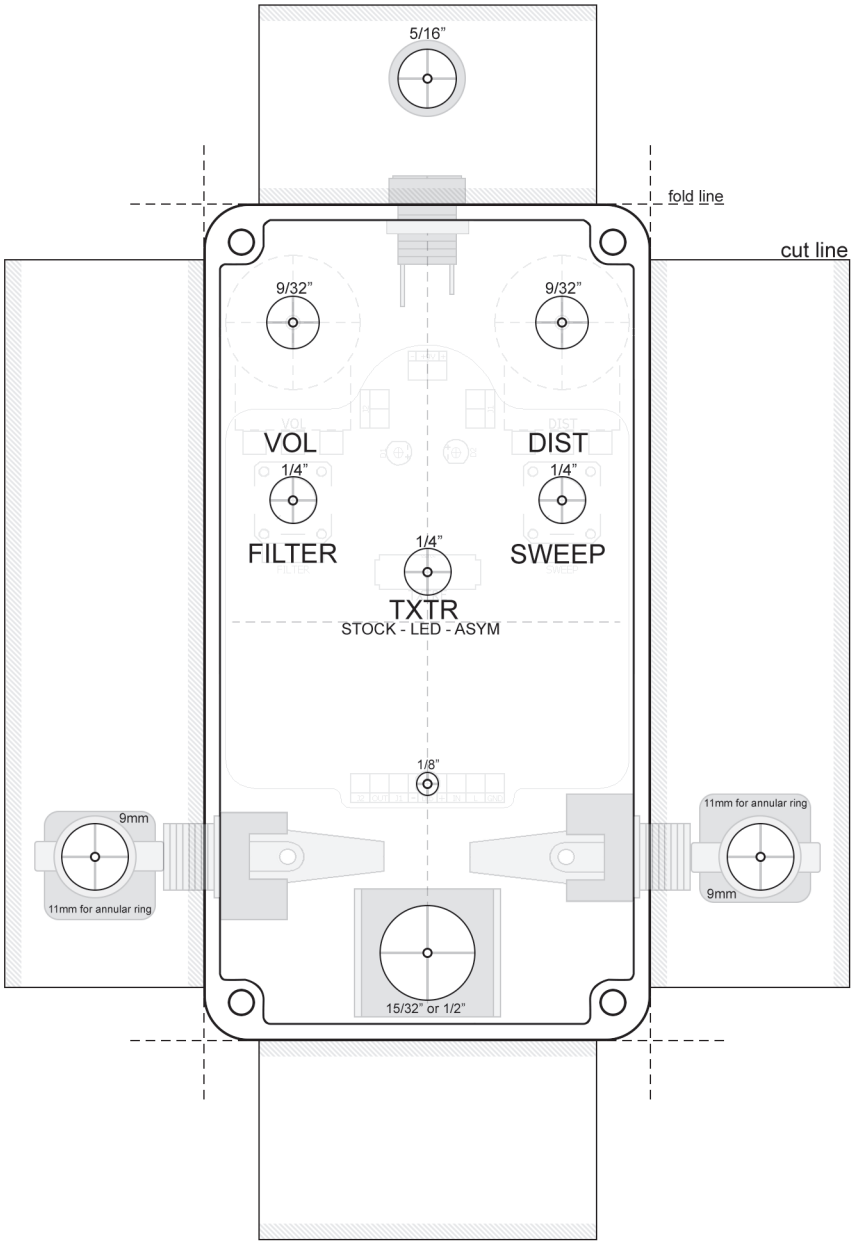
None. It’s absolutely perfect as is.



This shows wiring for the standard 3PDT bypass. If you are using either the Softie1 or 2 relay bypass, please refer to those documents for wiring.

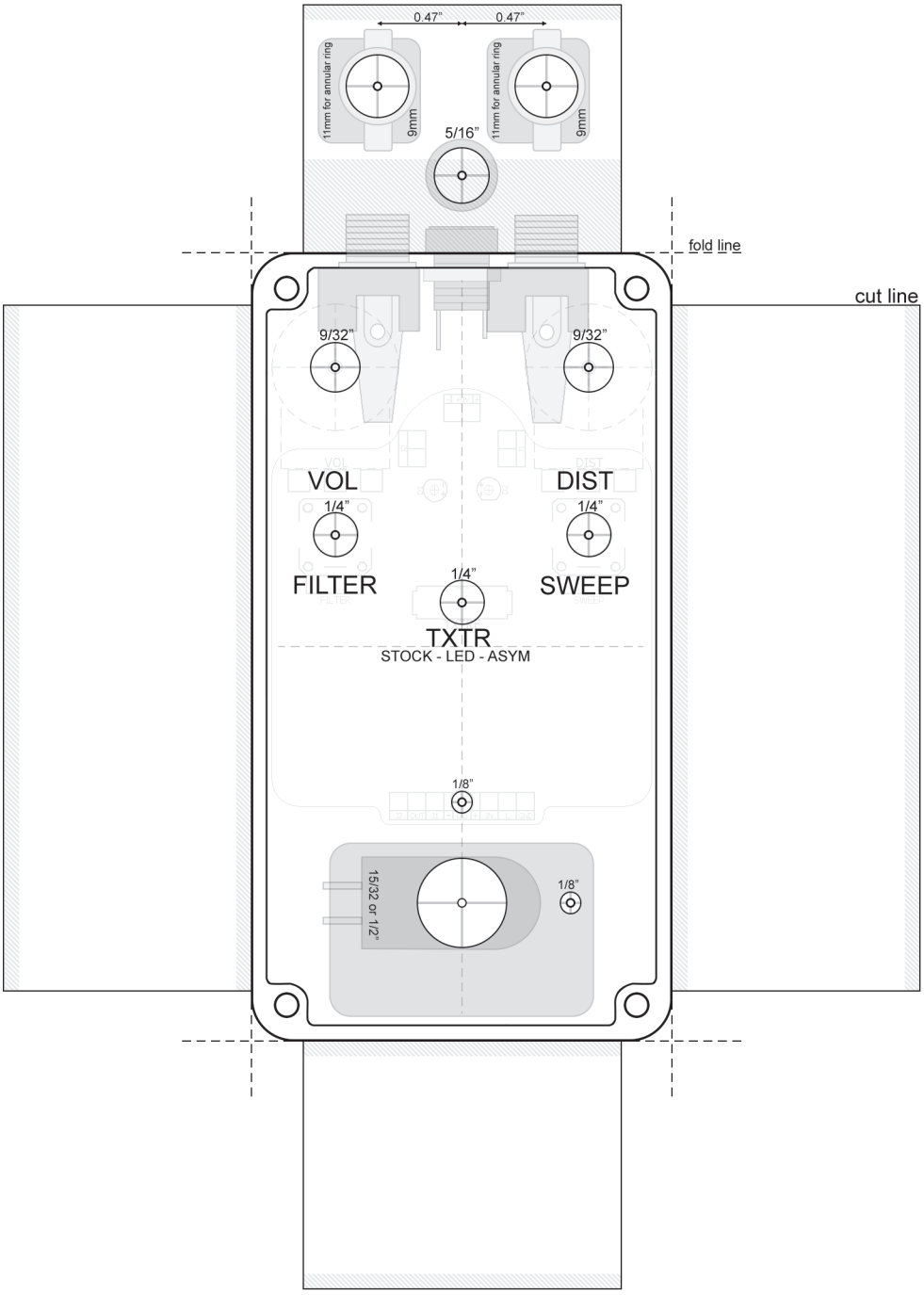
Note, if you are building in a 1590B you do not need to use the J1 and J2 connections at the top. Just wire your input and output jacks directly to the switch.

Note: *Drill Guides are approximate and may require tweaking depending on the types of jacks, switches and pots you use.*



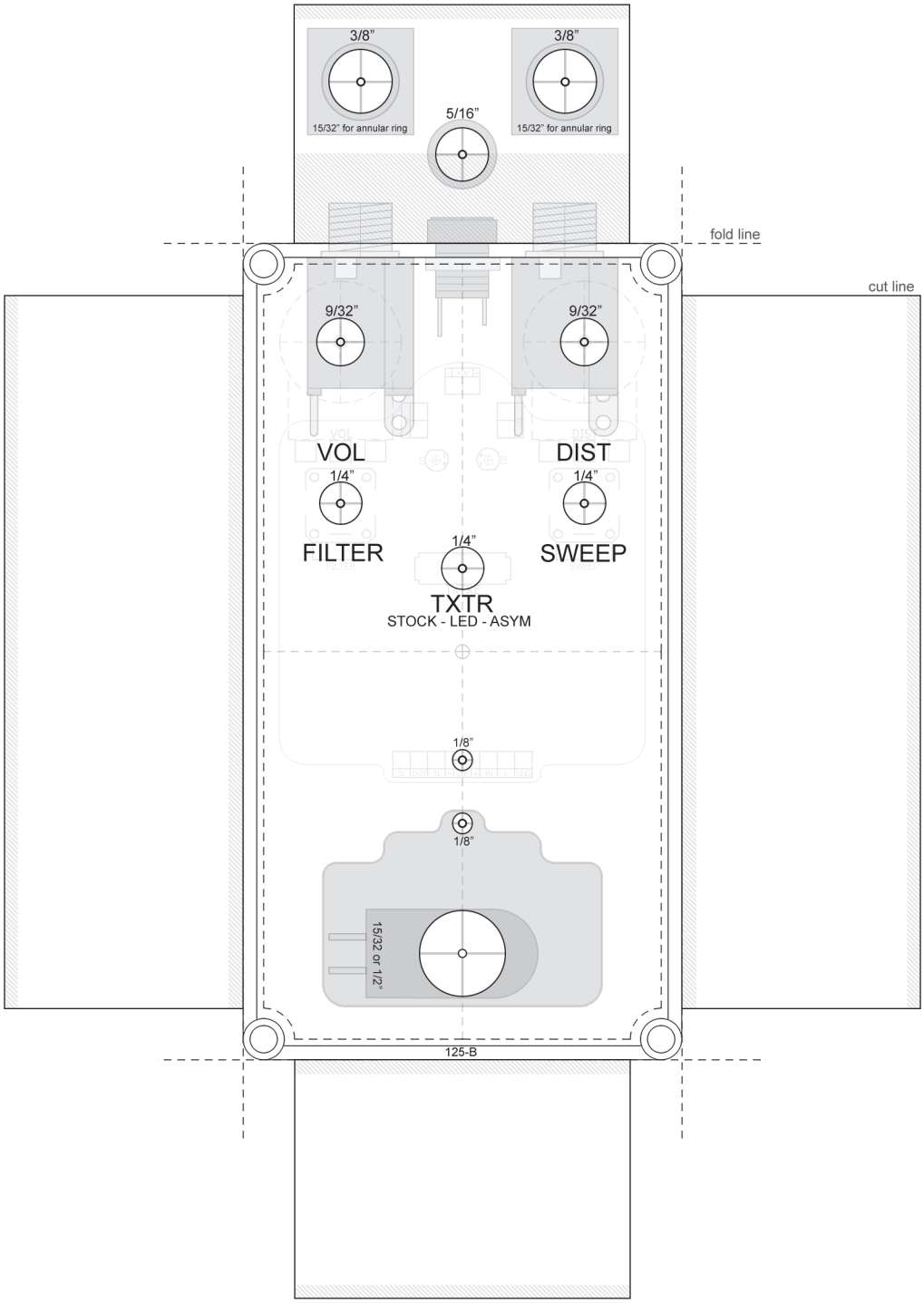
- This is a tight fit, but should work if you use the Lumberg style 1/4” jacks.
- I don’t recommend using any of the mbp 3pdt boards for this enclosure.

Note: *Drill Guides are approximate and may require tweaking depending on the types of jacks, switches and pots you use.*



- Shown with Softie 2 relay bypass. If you are using one of the mbp 3pdt bypass boards, or just a 3pdt switch on its own, move the drill spot for the switch a bit lower so you can fit everything properly. Drill only one LED spot!
- Lumberg style jacks are used here but other styles may fit using the same drill locations.

Note: *Drill Guides are approximate and may require tweaking depending on the types of jacks, switches and pots you use.*

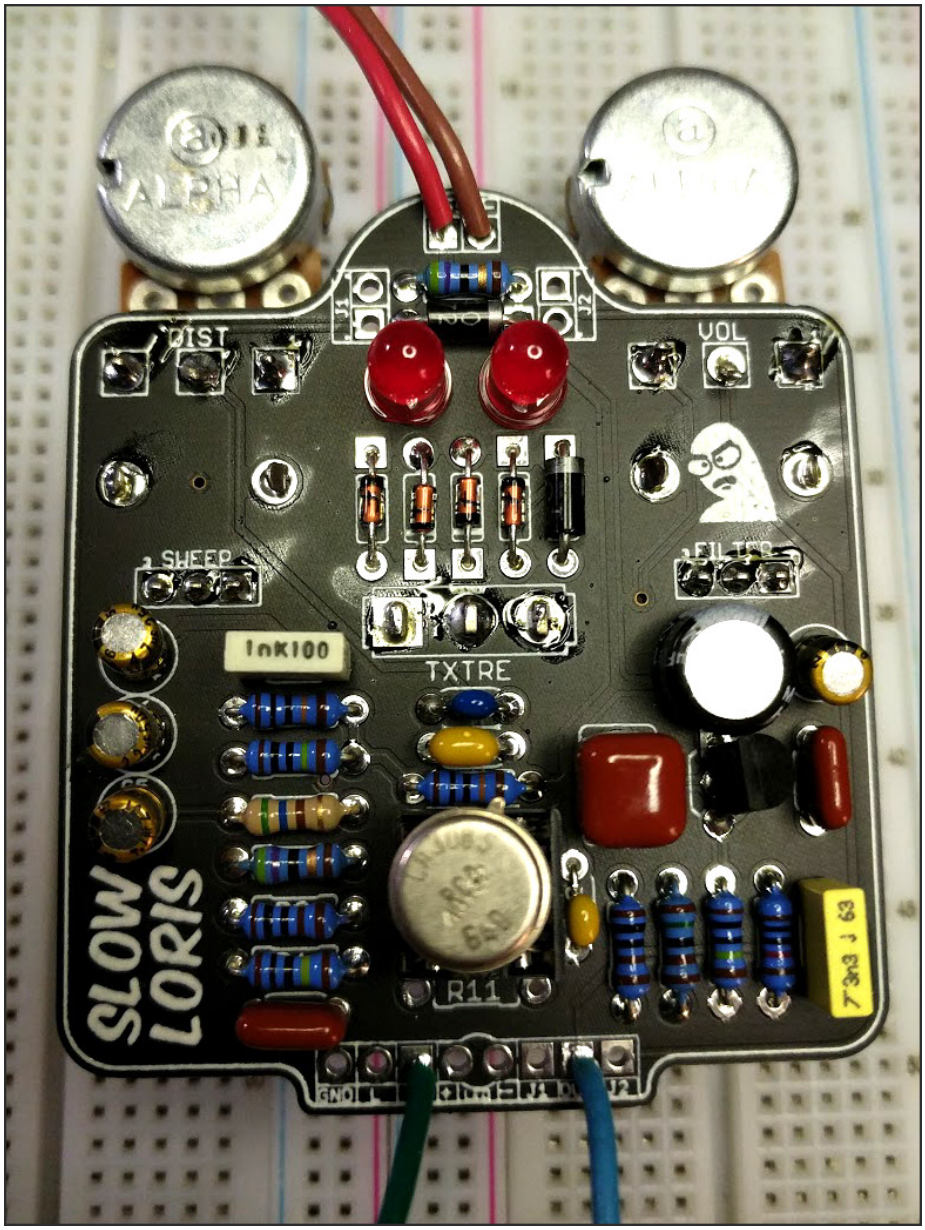


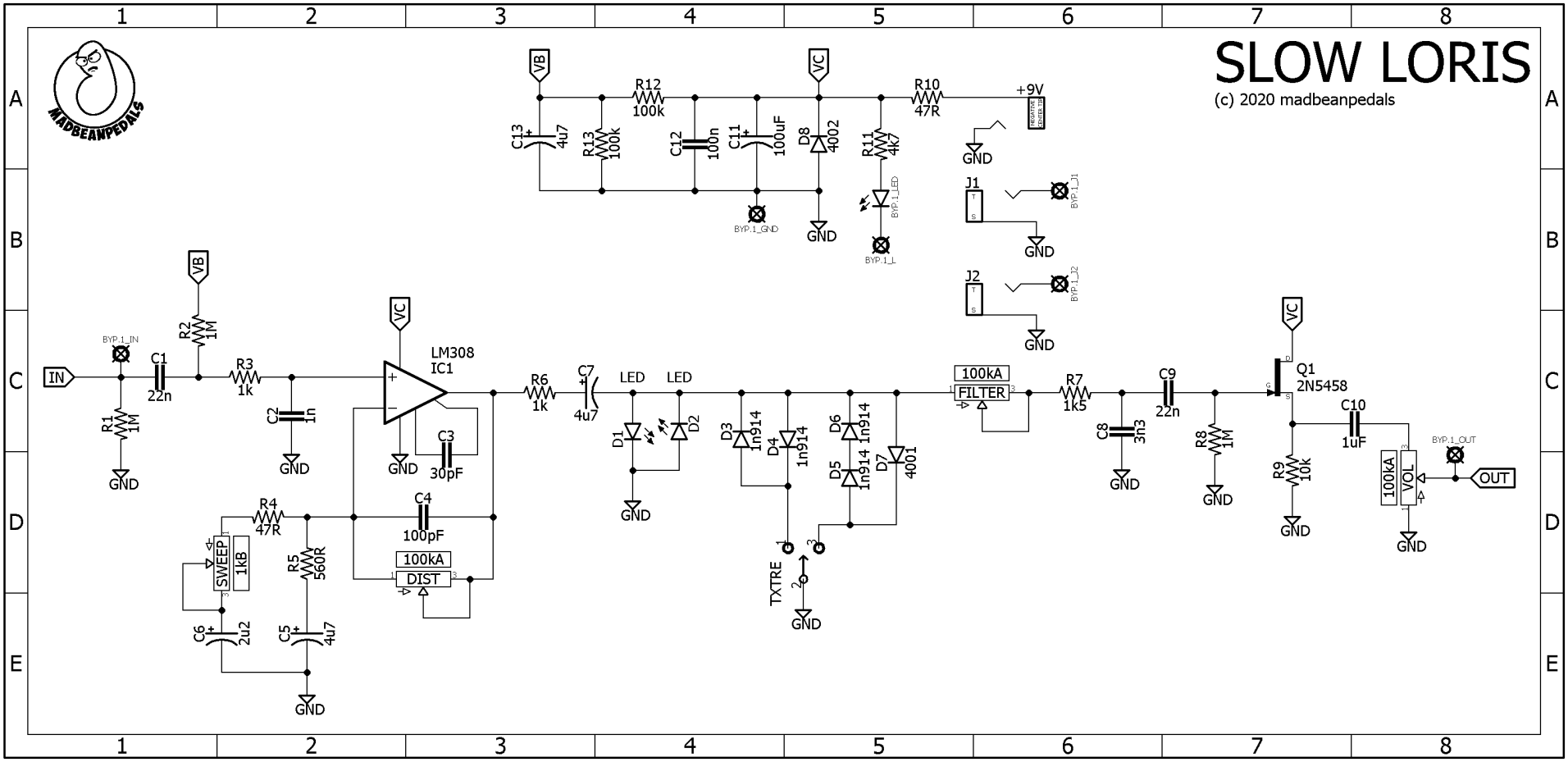
- Shown with Softie 1 relay bypass. Use the same drill spot for 3PDT switch or move to your desired location. Drill only one LED spot!
- Enclosed top jacks are used here, but you should also be able to fit open-frame metal jacks or the Lumberg style.
- You could also use side jacks but you'll need to move the Softie1 drill spot down. If you use side jacks with a regular 3pdt instead of the Softie simply pick your drill spots for the jacks.

IC1	LM308
1	8.8
2	4.68
3	4.25
4	0
5	ignore
6	4.74
7	9.39
8	4.81

Q1	2n5458
D	9.39
S	1.7
G	0

- 9.42vDC One Spot
- Current Draw ~ 1mA


DIST
VOL
SWEEP
FILTER
1nK100
TXTRE
R11
SLOW
LORIS


SLOW LORIS
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MADBEANPEDALS
VB
VC
+9V
R12 100k
R10 47R
C13 4u7
R13 100k
C12 100n
C11 100uF
D8 4002
R11 4k7
BYP.1_GND
BYP.1_LED
BYP.1_1
J1
BYP.1_J1
J2
BYP.1_J2
GND
BYP.1_IN
IN
C1 22n
R2 1M
R3 1k
R1 1M
C2 1n
LM308
IC1
C3 30pF
R6 1k
C7 4u7
LED
LED
D1
D2
D3 1n914
D4 1n914
D6 1n914
D5 1n914
D7 4001
100kA
FILTER
R7 1k5
C8 3n3
C9 22n
R8 1M
Q1 2N5458
R9 10k
C10 1uF
100kA
VOL
BYP.1_OUT
OUT
R4 47R
C4 100pF
100kA
DIST
SWEEP
1kB
R5 560R
C6 2u2
C5 4u7
TXTRE