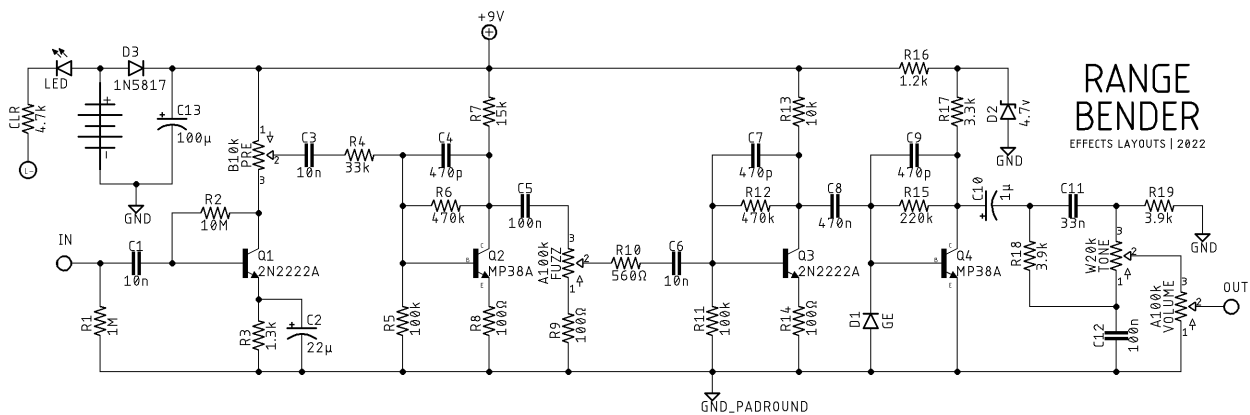


RANGE BENDER

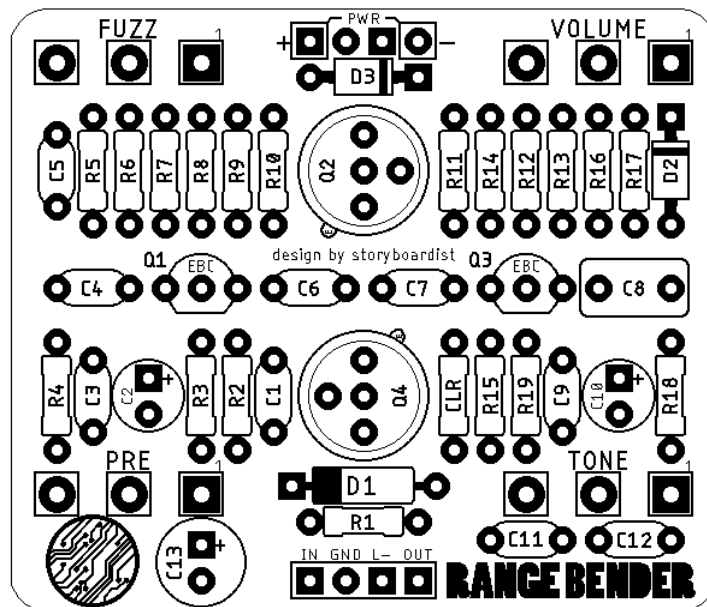
DESCRIPTION

The RANGE BENDER is a hybrid Tone Bender (similar to the later Jumbo version, based on the Big Muff) with a modified version of my DIRT MASTER pushing it as a preamp/saturator. Using both silicon and germanium transistors, the RANGE BENDER offers a lot of gain, ranging from classic fuzz tones to full on doom.

SCHEMATIC



LAYOUT



BOM

Resistors

R1	1M
R2	10M
R3	1.3k
R4	33k
R5	100k
R6	470k
R7	15k
R8	100Ω
R9	100Ω
R10	560Ω
R11	100k
R12	470k
R13	10k
R14	100Ω
R15	220k
R16	1.2k
R17	3.3k
R18	3.9k
R19	3.9k
CLR	4.7k

Capacitors

C1	10n
C2	22μ
C3	10n
C4	470p
C5	100n
C6	10n
C7	470p
C8	470n

C9	470p
C10	1μ
C11	33n
C12	100n
C13	100μ

Semiconductors

D1	1N34A or similar
D2	4.7v Zener
D3	1N5817
LED	3 or 5mm
Q1	2N2222A
Q2	MP38A
Q3	2N2222A
Q4	MP38A

Electromechanical

FUZZ	A100k
PRE	B10k
TONE	W20k
VOLUME	A100k

Notes

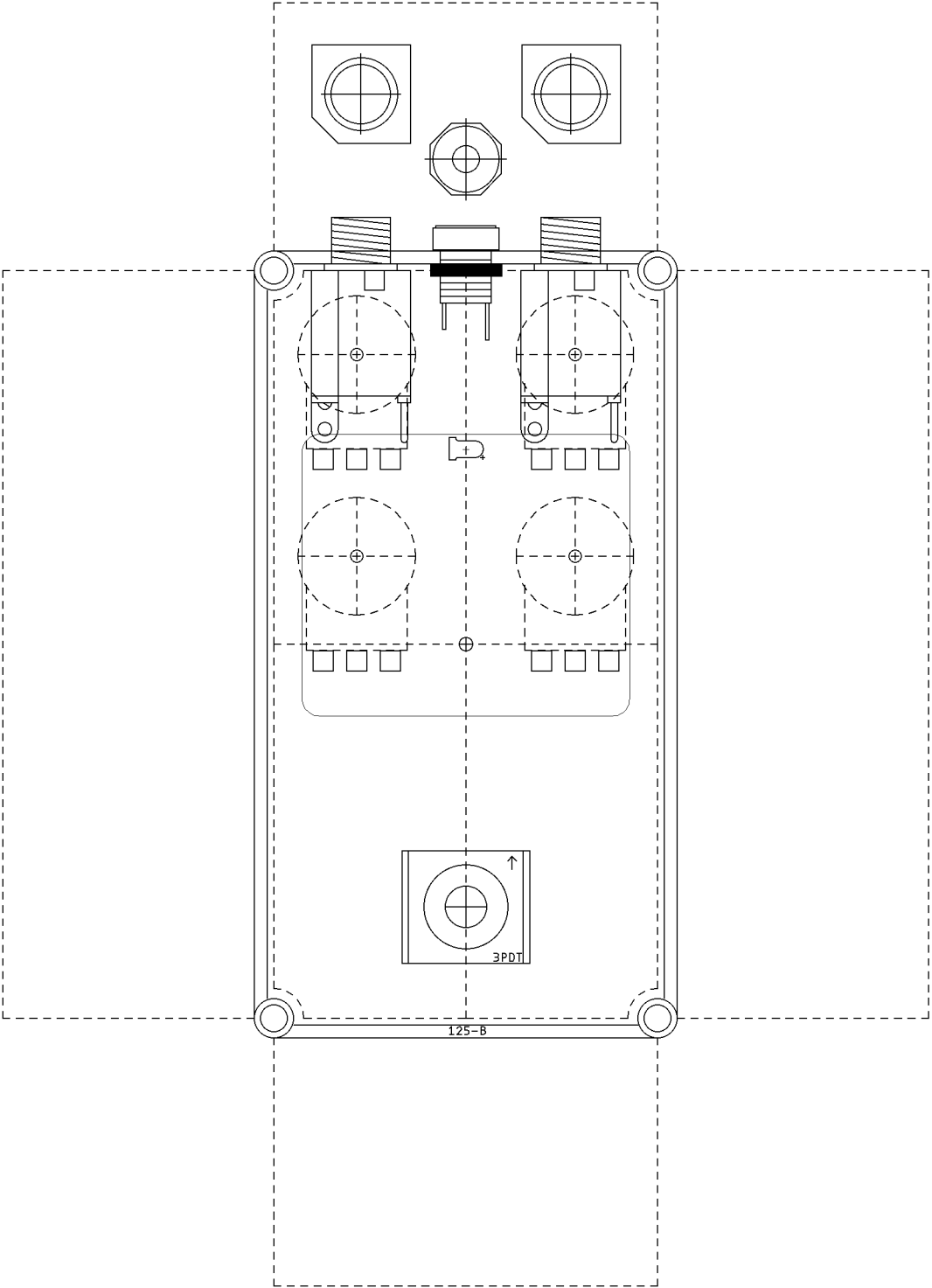
D2 helps bias Q4 and isn't always necessary. This circuit is ripe for experimentation. If there's too much gain for your taste reduce or omit C2. Silicon transistors should also work for Q2 and Q4. Try lower hFE types like the 2N2222A, 2N3904, or 2N5550s. A B20k pot works in place of the W taper.

SHOPPING LIST

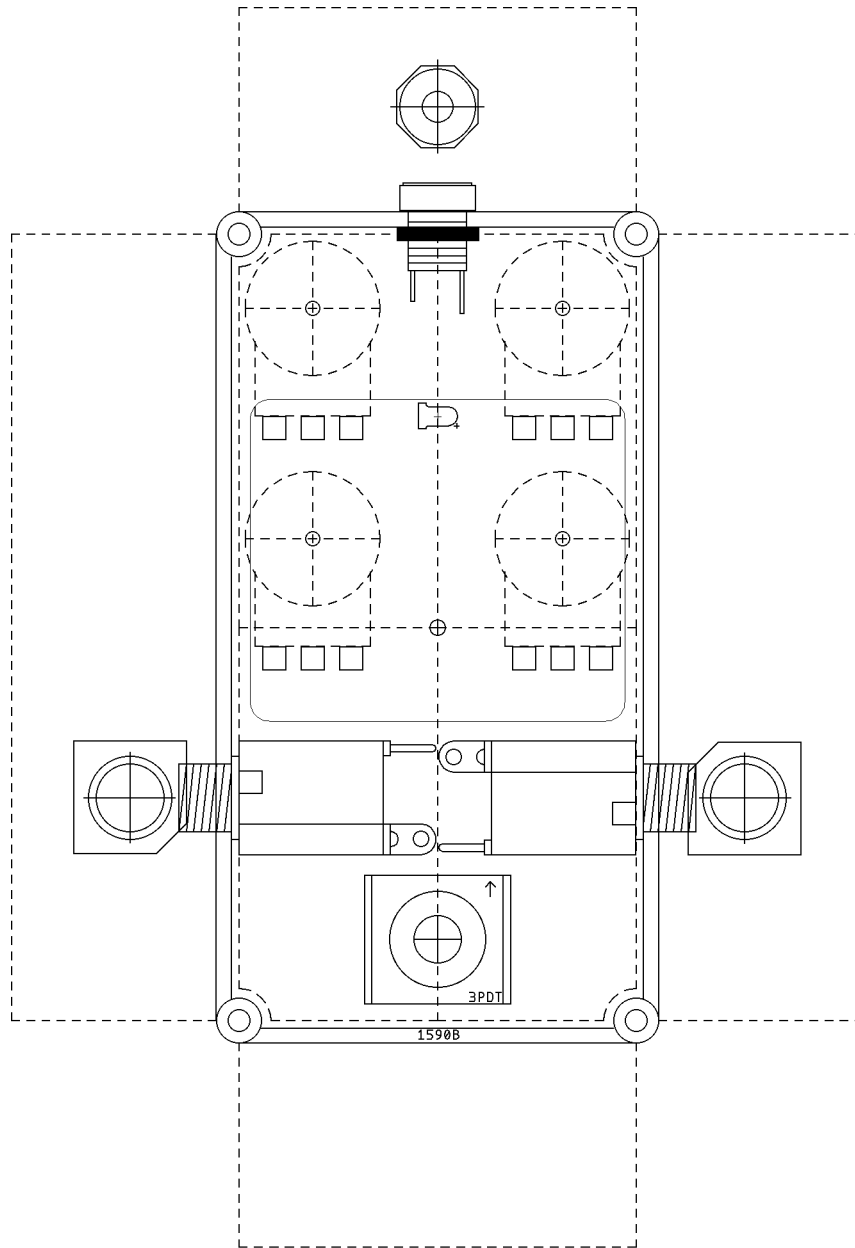
Value	Type (suggested)	Quantity
100Ω	¼ watt metal or carbon film	3
560Ω	¼ watt metal or carbon film	1
1.2k	¼ watt metal or carbon film	1
1.3k	¼ watt metal or carbon film	1
3.3k	¼ watt metal or carbon film	1
3.9k	¼ watt metal or carbon film	2
4.7k	¼ watt metal or carbon film	1
10k	¼ watt metal or carbon film	1
15k	¼ watt metal or carbon film	1

33k	¼ watt metal or carbon film	1
100k	¼ watt metal or carbon film	2
220k	¼ watt metal or carbon film	1
470k	¼ watt metal or carbon film	2
1M	¼ watt metal or carbon film	1
10M	¼ watt metal or carbon film	1
470p	Ceramic	3
10n	Film	3
33n	Film	1
100n	Film	2
470n	Film	1
1μ	Electrolytic (25v+)	1
22μ	Electrolytic (25v+)	1
100μ	Electrolytic (25v+)	1
1N34A	Germanium diode	1
1N5817	Schottky rectifier diode	1
4.7v	Zener	1
LED	3 or 5mm	1
2N2222A	BJT	2
MP38A	Germanium BJT	2
A100k	16mm right angle PC mount	2
B10k	16mm right angle PC mount	1
W20k	16mm right angle PC mount	1

DRILL TEMPLATE (125B)



DRILL TEMPLATE (1590B)



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For DIY and small commercial applications.
Not for non-peer to peer resale.