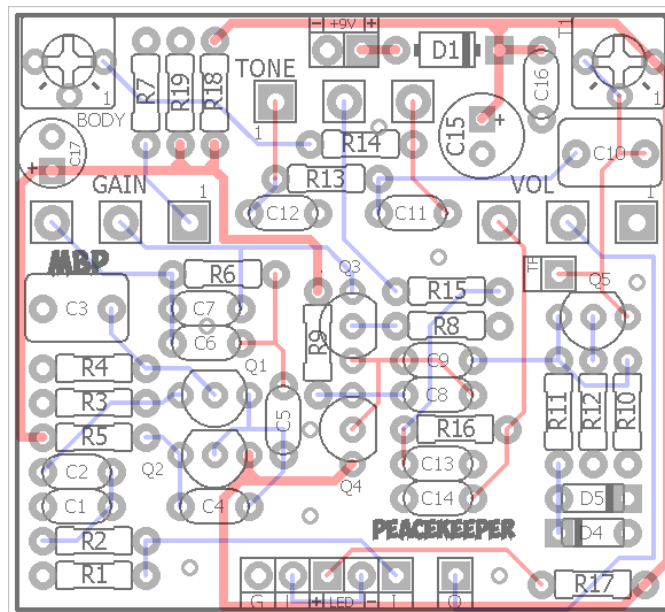
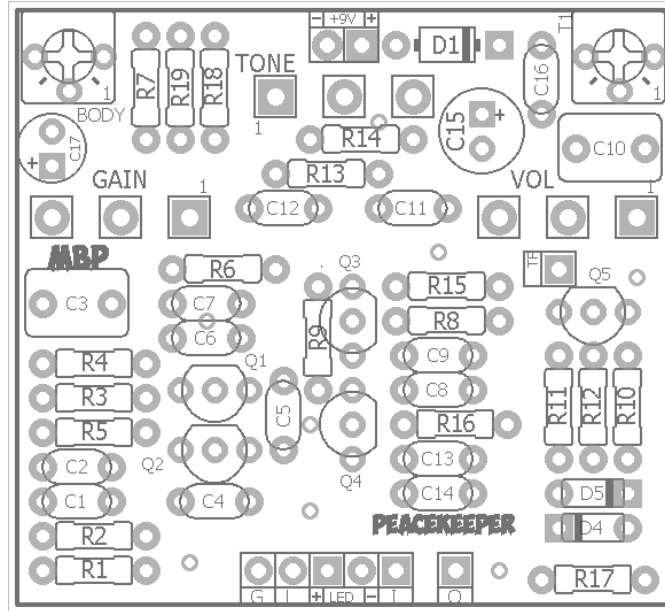


PEACEKEEPER

FX TYPE: Overdrive

© 2015 madbeanpedals

1.95" W x 1.775" H



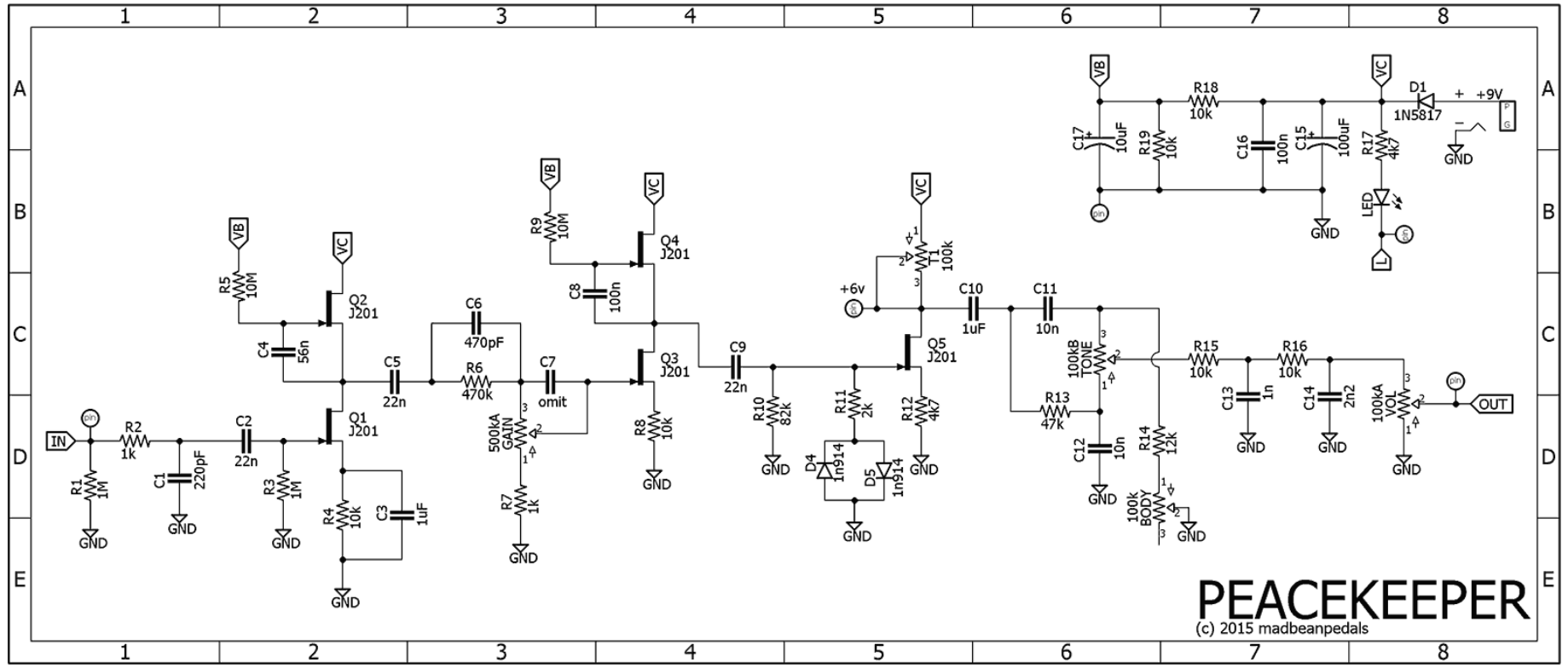
Terms of Use: You are free to use purchased **Peacekeeper** circuit boards for both DIY and small commercial operations. You may not offer **Peacekeeper** PCBs for resale or as part of a "kit" in a commercial fashion. Peer to peer re-sale is, of course, okay.

B.O.M.

Resistors		Caps		Diodes	
R1	1M	C1	220pF	D1	1N5817
R2	1k	C2	22n	D4	1n914
R3	1M	C3	1uF	D5	1n914
R4	10k	C4	56n	Transistors	
R5	10M	C5	22n	Q1 - Q5	J201
R6	470k	C6	470pF	Trimmers	
R7	1k	C7	omit	T1	100k
R8	10k	C8	100n	BODY	100k
R9	10M	C9	22n	Pots	
R10	82k	C10	1uF	VOL	100kA
R11	2k	C11	10n	TONE	100kB
R12	4k7	C12	10n	GAIN	500kA
R13	47k	C13	1n		
R14	12k	C14	2n2		
R15	10k	C15	100uF		
R16	10k	C16	100n		
R17	4k7	C17	10uF		
R18	10k				
R19	10k				

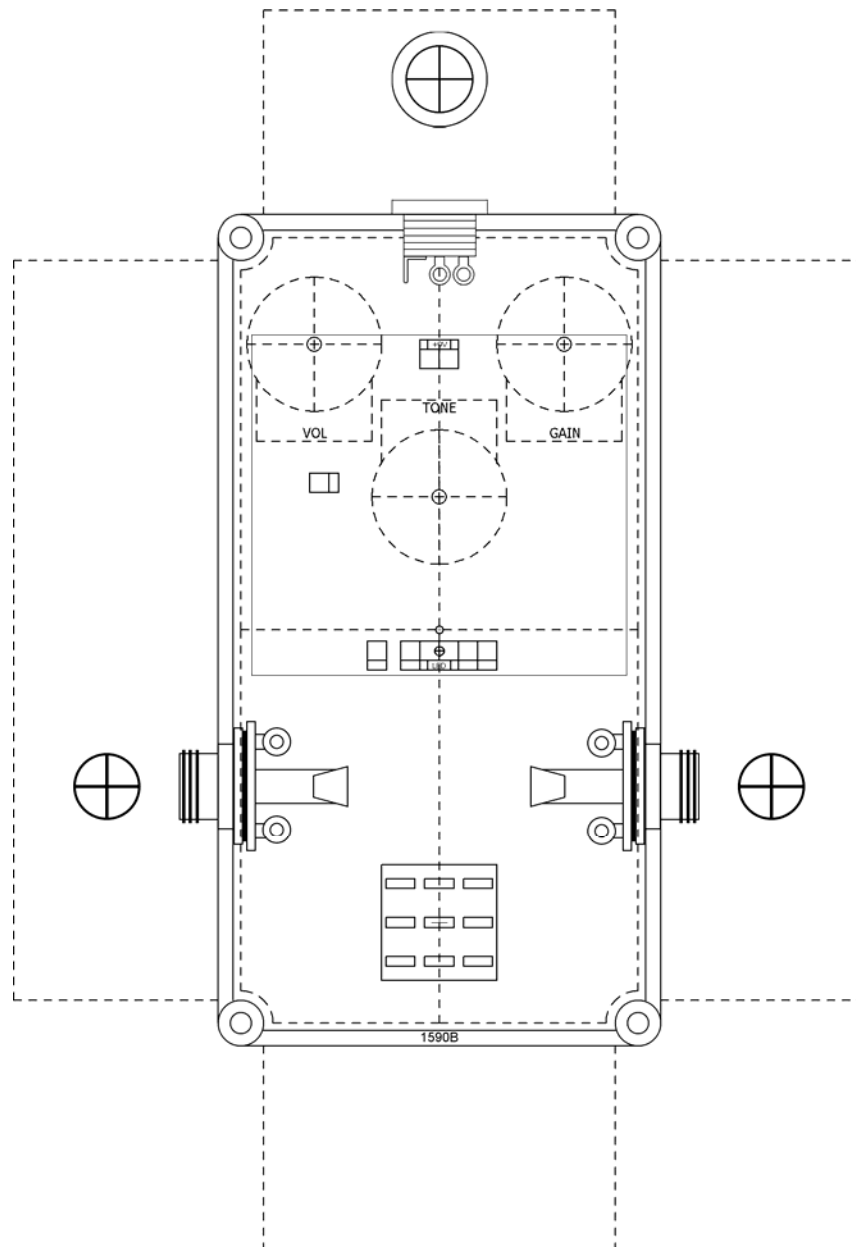
Shopping List

Value	QTY	Type	Rating
1k	2	Metal / Carbon Film	1/4W
2k	1	Metal / Carbon Film	1/4W
4k7	2	Metal / Carbon Film	1/4W
10k	6	Metal / Carbon Film	1/4W
12k	1	Metal / Carbon Film	1/4W
47k	1	Metal / Carbon Film	1/4W
82k	1	Metal / Carbon Film	1/4W
470k	1	Metal / Carbon Film	1/4W
1M	2	Metal / Carbon Film	1/4W
10M	2	Metal / Carbon Film	1/4W
150pF	1	Ceramic	16v min.
220pF	1	Ceramic	16v min.
470pF	1	Ceramic	16v min.
1n	1	Film	16v min.
2n2	1	Film	16v min.
10n	2	Film	16v min.
22n	3	Film	16v min.
56n	1	Film	16v min.
100n	2	Film	16v min.
1uF	2	Film	16v min.
10uF	1	Electrolytic	16v min.
100uF	1	Electrolytic	16v min.
1N5817	1		
1n914	2		
J201	5		
100k	2	Bourns 3362P	
100kA	1	PCB Right Angle	16mm
100kB	1	PCB Right Angle	16mm
500kA	1	PCB Right Angle	16mm



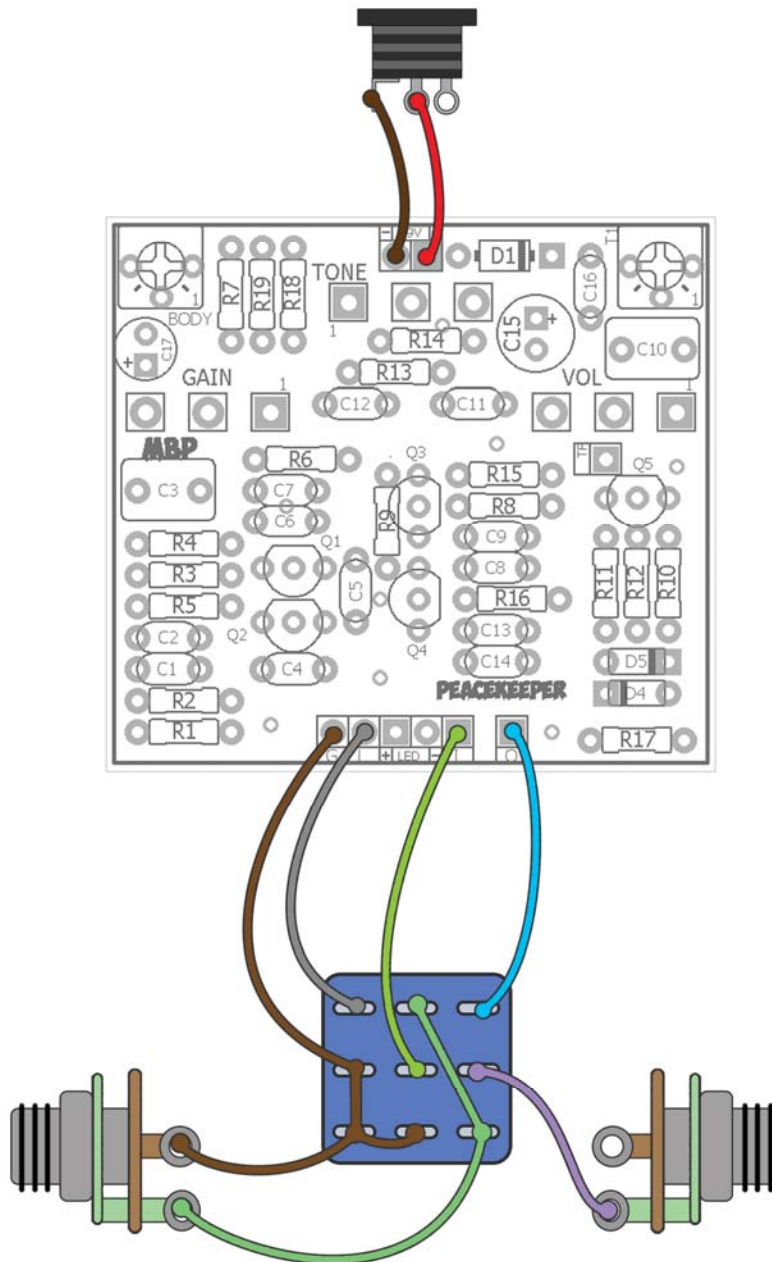
1590B Drill Guide

4.43" W x 6.46" H



Photoshop file: http://www.madbeanpedals.com/projects/Peacekeeper/Peacekeeper_DRILL.zip

Wiring Guide



- The indicator LED can be soldered directly to the PCB.
- The enclosure grounds the output jack. If testing outside an enclosure with the jacks wired, you must ground the output jack sleeve.

The **Peacekeeper** is a high gain overdrive which utilizes cascaded JFET gain stages and a simple Muff-type tone control. It ranges from moderate to high saturation but retains a fair amount of touch sensitivity over the entire gain control. It responds very well to the volume knob on your guitar when the Gain knob is set in its first half.

The Peacekeeper went through several design variations (different tone controls, input and output stages, etc) but in the end it was borrowed from the OD section of the "Laserwolf" multi-fx project on madbeanpedals which ended up being the best sounding of the lot. It adds two additional mods to the design: a "Body" trimmer to change how the tone control behaves and some mild silicon diode clipping for a touch more texture on the gain.

Controls are self-explanatory.

Notes

BODY trimmer - This trimmer alters how the Tone control behaves. At halfway up (nominal position) the tone control is fairly flat when it is set to the middle position. When the Body trimmer is turned down, it scoops out some of the mid-range frequencies across the entire tone control. When the Body trimmer is turned up, it boosts mid to lower range frequencies slightly. While you can make this an external pot if you like, its function is somewhat limited. I tend to keep mine between 1/2 - 3/4 up all the time.

T1 trimmer - This trimmer sets the bias point for the drain of Q5. Using your multimeter, adjust the trimmer to 6v on the TP (test point) pad on the PCB.

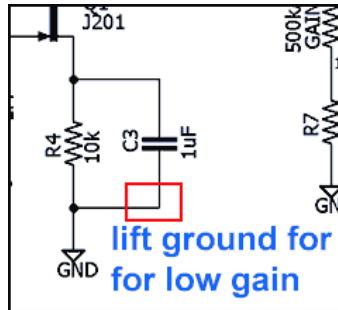
C7 is omitted from the final BOM. This cap helps retain more high end when the Gain pot is turned down, however, I think it is better left off since the circuit has enough as is. If you want to try it for yourself, socket a 150pF ceramic cap in there.

Voltages

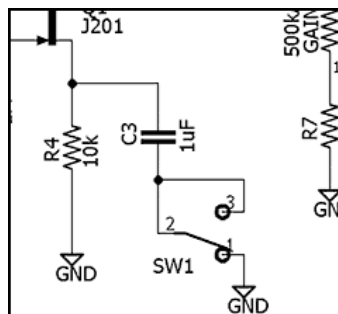
9.42v Supply					
Q1	J201	Q2	J201	Q3	J201
D	5.13	D	9.26	D	5.32
S	0.51	S	5.13	S	0.71
G	0	G	2.42	G	0.3mV
Q4	J201	Q5	J201		
D	9.27	D	5.9		
S	5.32	S	0.57		
G	2.43	G	0.1mV		

Low Gain mod

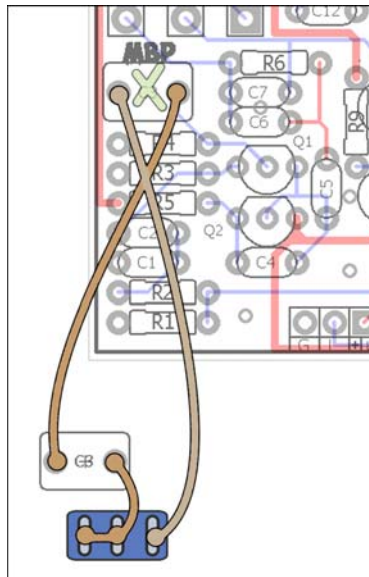
By default, the Peacekeeper is fairly "medium gain" at its lowest settings and highly saturated at max gain. If you would like to have more low gain available, omit the C3 1uF bypass cap. This will result in reduced high gain (there is still quite a bit on tap even with the mod). Alternatively, you can put the 1uF cap on an SPDT On/On switch to go between low and high gain modes. Unfortunately, this option was not considered until after the boards were manufactured so it will require some off-board wiring.



We need to lift the bypass cap from ground.



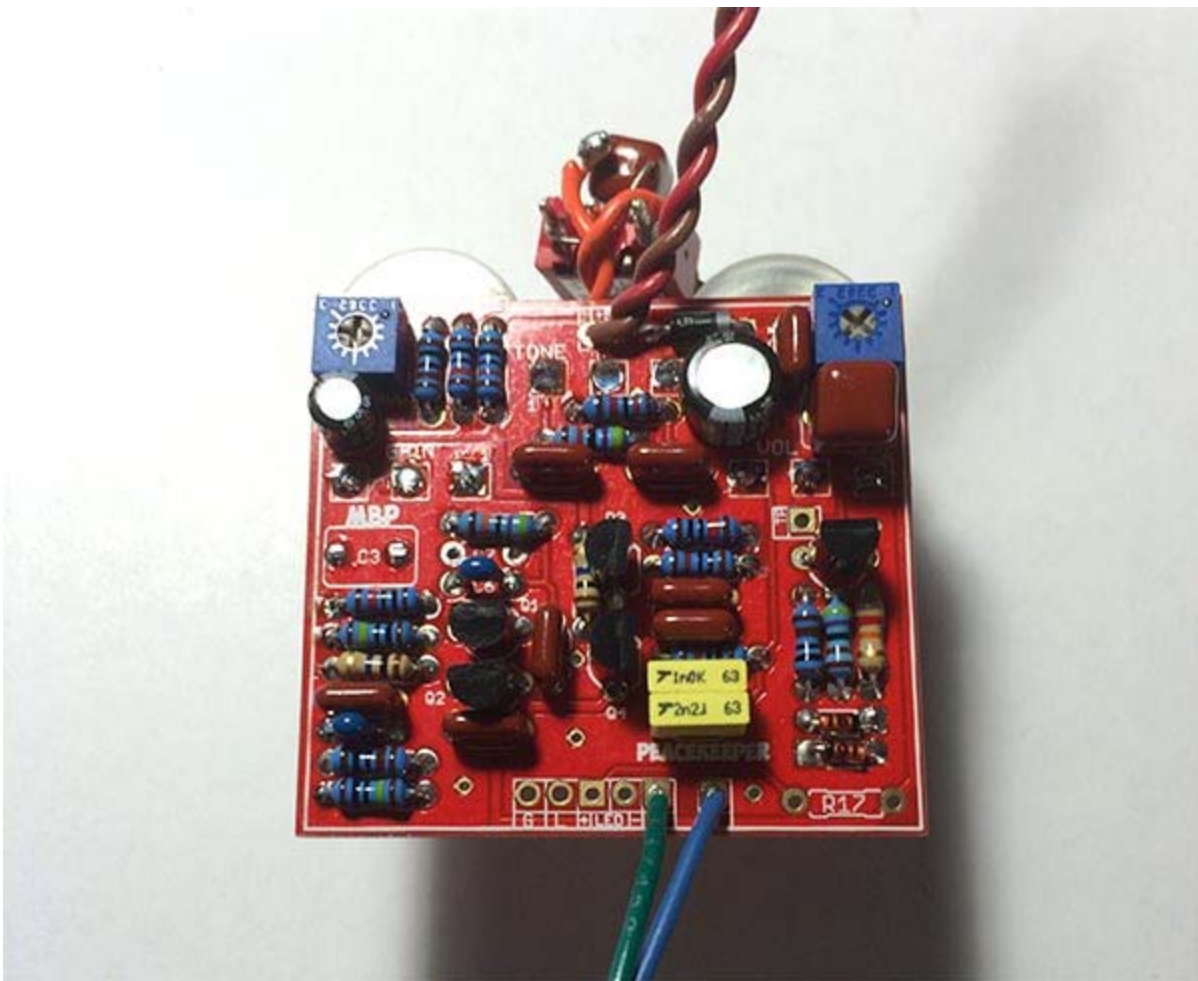
And put it on an SPDT switch



Solder one lead from the 1uF cap to the middle and outer lugs of the switch. Solder the second lead to a wire and solder the end of that wire to the C3 pad as shown. Now solder a wire to the remaining lug on the switch and the remaining end of that wire to the other C3 pad. When the switch is in the left position, the circuit is in low gain mode. In the right position it is high gain. If you get a "pop" when you flip the switch, solder a 1M resistor between the two wires (either on the switch or the bottom of the PCB at C3).



Here is the switch wired up.



And the final build with the switch up top between the two pots. You may need to modify the drill spots on the Drill Guide if you are using this switch.