PING

FX TYPE: Reverb

© 2016 madbeanpedals

1.7" W x 1.625" H
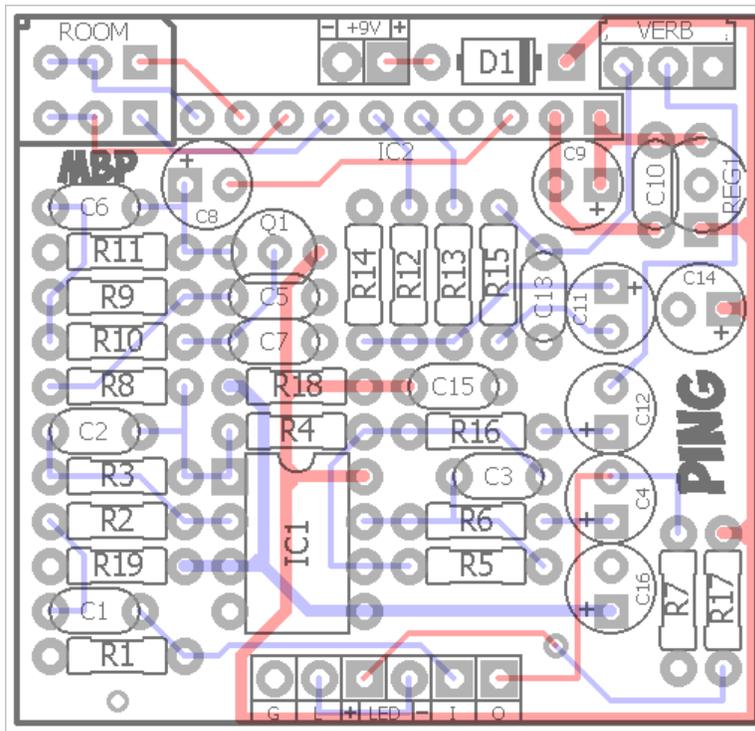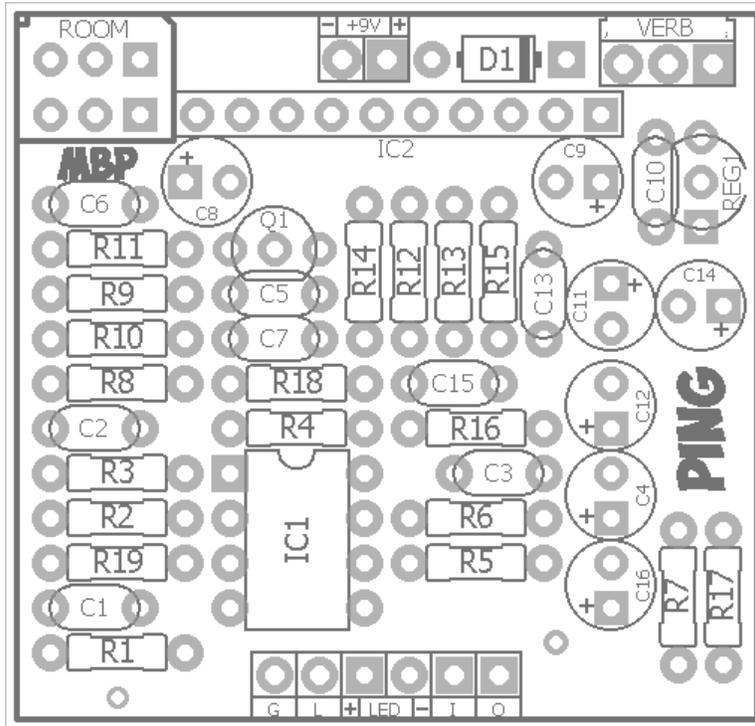
B.O.M.

Resistors		Caps		Diodes	
R1	1M	C1	100n	D1	1N5817
R2	220k	C2	10pF	**Transistors**	
R3	220k	C3	100pF	Q1	2N5088
R4	15k	C4	1uF	**IC's**	
R5	15k	C5	15n	IC1	TL072
R6	470R	C6	39n	IC2	BTDR-3
R7	100k	C7	470pF	**Regulator**	
R8	10k	C8	1uF	REG1	LM78L05
R9	10k	C9	10uF	**Pots**	
R10	10k	C10	100n	ROOM	100kB-Dual
R11	10k	C11	1uF	VERB	100kB
R12	4k7	C12	1uF		
R13	4k7	C13	47n		
R14	100k	C14	47uF		
R15	2k	C15	100n		
R16	4k7	C16	10uF		
R17	4k7				
R18	10k				
R19	10k				

Shopping List			
Value	QTY	Type	Rating
470R	1	Metal / Carbon Film	1/4W
2k	1	Metal / Carbon Film	1/4W
4k7	4	Metal / Carbon Film	1/4W
10k	6	Metal / Carbon Film	1/4W
15k	2	Metal / Carbon Film	1/4W
100k	2	Metal / Carbon Film	1/4W
220k	2	Metal / Carbon Film	1/4W
1M	1	Metal / Carbon Film	1/4W
10pF	1	Ceramic	16v min.
100pF	1	Ceramic	16v min.
470pF	1	Ceramic	16v min.
15n	1	Film	16v min.
39n	1	Film	16v min.
47n	1	Film	16v min.
100n	3	Film	16v min.
1uF	4	Electrolytic	16v min.
10uF	2	Electrolytic	16v min.
47uF	1	Electrolytic	16v min.
1N5817	1		
2N5088	1		
TL072	1		
BTDR-3	1		
LM78L05	1		
100kB-Dual	1	PCB Pin Mount	9mm
100kB	1	PCB Pin Mount	9mm

BTDR Brick:
http://smallbear-electronics.mybigcommerce.com/belton-btdr-3h-reverb-modules/
https://www.tubesandmore.com/products/P-RBTDR-3H

100kB pot:
http://smallbear-electronics.mybigcommerce.com/alpha-single-gang-9mm-pc-mount/

100kB Dual Gang:
 http://smallbear-electronics.mybigcommerce.com/alpha-dual-gang-9mm-pc-mount/
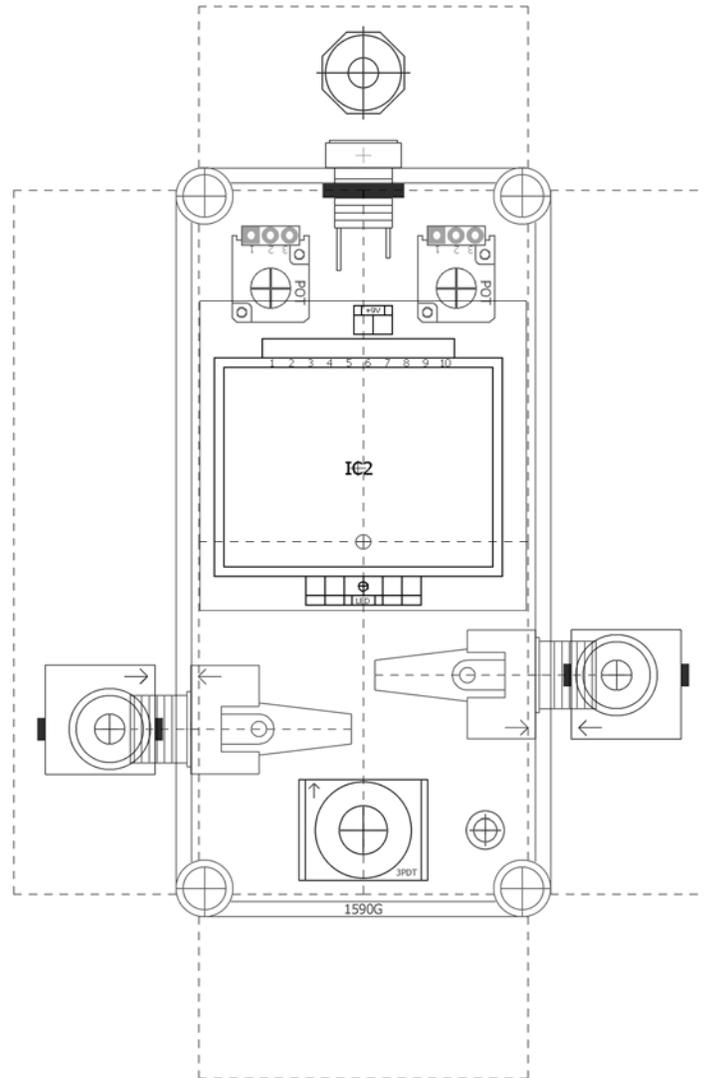
1590G Drill Guide

3.66"W x 5.63"H

Indicator LED should be wired off-board. I've shown one possible spot next to the 3PDT switch.

Unlike all the other 1590G builds, the jacks on this one should be mounted top to bottom as shown, rather than on their sides. This is to allow for a little extra space for the PCB, brick and pots to fit together without a headache.

Overview

The Ping is a simple but effective reverb designed for the Belton BTDR-3 reverb brick.

Controls

- **Verb:** The reverb volume mixed with the dry signal.
- **Room:** The depth, or size, of the reverb effect. At the minimum setting, the Room knob has a pseudo-plate type effect. At max, it is pretty cavernous.

Notes

The newest BTDR bricks have a casing slightly larger than the ones manufactured a year ago (the one the Ping was originally designed for). The height and width are the same but the length has increased a millimeter or two. This is fine for the Ping, but it does mean you should solder the I/O wires on before soldering the brick in place since the casing will extend into that area. In fact, soldering the brick in will be the last step.

This is probably the most difficult of the 1590G projects to build. The circuit is pretty simple, but the size of the brick and the pot wiring make it more of a challenge to fit everything together. If you follow the guideline below you should have no problem.

Fig.1

Solder up all the parts to the PCB except for the pots and BTDR brick. The key here is to trim your component leads as short as you can. The brick goes directly over these and they need to be as flush as possible. A good example of this is the solder joints right below the 5, 6 and 7 text shown above. I usually bend leads over to hold components in place for soldering, but in this case I left them straight so I could cut them close. I suggest doing the same.

Fig.2
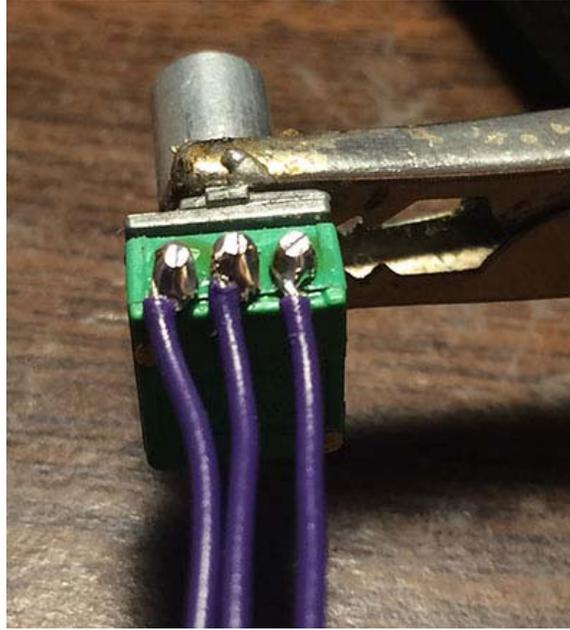
Solder wires to the 100kB pot. Be sure that the wires/solder to not touch one another. Clip the excess pin leads from the pot as shown. Solder this pot to the Verb pads on the Ping PCB.

Fig.3

This is the hardest part. Solder wires to the dual-gang pot. You don't need to do all 6 pins. Only pins 2 and 1 on each row. Pin3 is left unconnected on both rows. It doesn't have to look beautiful, but again, make sure your wires/solder don't touch each other. Clip the excess leads on the pins. Mine looks not so nice, but trust me…those wires don't touch at all.

Fig. 4
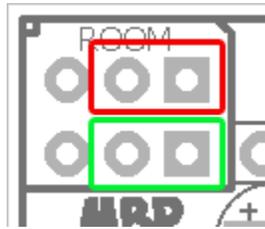
Solder the wires from the dual-gang pot to the Room pot on the Ping PCB. Solder the first row the area in green and the second row to the area in red (it doesn't matter which row goes where…as long as you don't cross rows).

At this point, you should solder on all other wires to the PCB, including the ones to you indicator LED (which needs to be mounted off-board on this build). Now you should only have the brick left to install.

Make sure the solder pins on your brick are at a 90° angle to its casing. If not, you can very gently press them into your table to bend them slightly…but be careful!

Load the brick onto the bottom of the Ping PCB. You should have only a very small gap between the PCB and the brick, like this:

If your placement looks similar you are good to go! Solder it in and fire it up.

One last detail: the whole build is obviously going to be loose in the enclosure since we don't have an anchor point. This should be okay because there is almost no room for anything to move. If you want a little extra assurance, use a thin piece of double sided tape or flatten out a spot of Blu Tac and put it right on the brick. That should be plenty enough to keep it from moving around.

Ignore that the Room pot is wired to the wrong pads in this pic. My proto had it reversed.

Voltages

IC1	V	IC2	V
1	4.55	1	5
2	4.55	2	0
3	4.55	3	ignore
4	0	4	0
5	4.55	5	0
6	4.55	6	0
7	4.55	7	2.54
8	9.1	8	2.52

Q1	V		
C	9.1	9	2.54
B	4.51	10	2.51
E	3.94		

REG1	V
I	9.1
G	0
O	5

PING

(c) 2016 madbeanpedals