

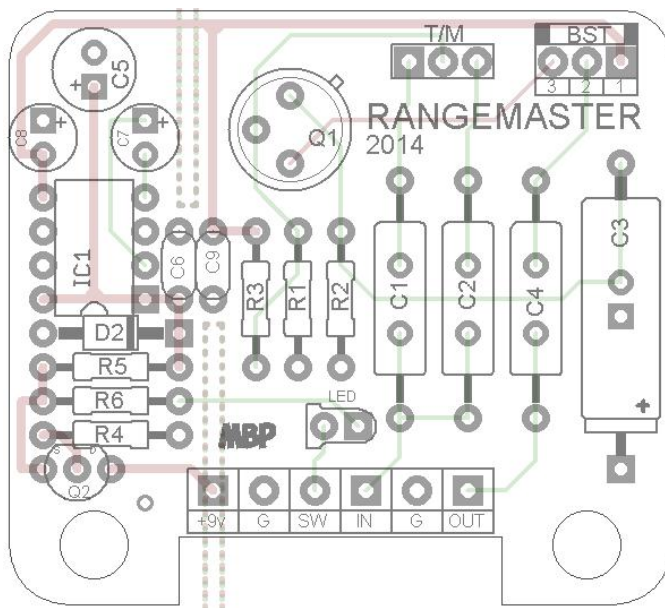
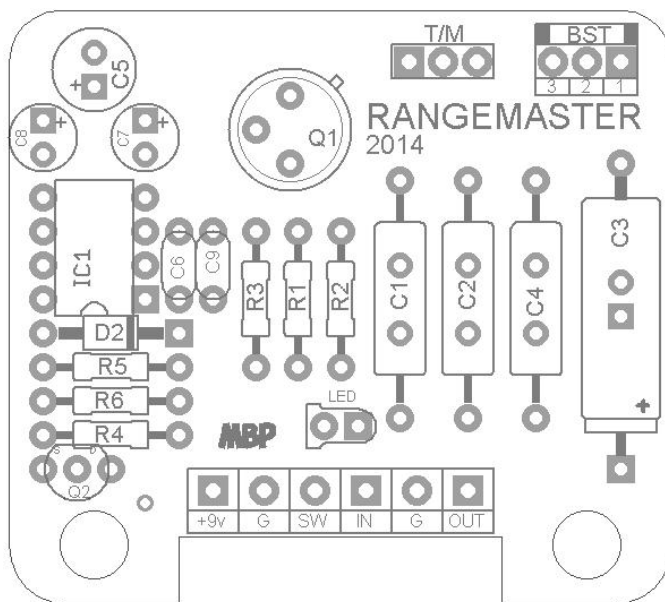
RANGEMASTER

FT TYPE: Boost

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2014 version: new layout, added voltage inverter

1.95" W x 1.75"H



The extra small pads are vias. You do not need to do anything with them.

Previous version of the Rangemaster (before August 2014)

<http://www.madbeanpedals.com/projects/Rangemaster/Rangemaster.zip>

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

Resistors		B.O.M. Caps		Diodes	
R1	68k	C1	5n	D2	12v Zener
R2	3k9	C2	22n	Transistors	
R3	470k	C3	47uF	Q1	OC44
R4	1M	C4	10n	Q2	BS250
R5	47R	C5	100uF	IC	
R6	4k7	C6	100n	IC1	TC1044SCPA
		C7	47uF	Switch	
		C8	47uF	T/M	SPDT
		C9	100n	Pots	
				BST	10kA

Shopping List				
Value	QTY	Type	Rating	
47R	1	carbon or metal film	1/4W	
3k9	1	carbon or metal film	1/4W	
4k7	1	carbon or metal film	1/4W	
68k	1	carbon or metal film	1/4W	
470k	1	carbon or metal film	1/4W	
1M	1	carbon or metal film	1/4W	
5n	1	film	16v	
10n	1	film	16v	
22n	1	film	16v	
100n	2	film	16v	
47uF	3	electrolytic	16v	
100uF	1	electrolytic	16v	
12v Zener	1			
OC44	1	PNP device		
BS250	1			
		or, ICL7660	SCPA,	
TC1044	1	MAX1044	CPA	
SPDT	1	On/On		
10kA	1	16mm		

Special note of fail: The PCB was designed to have two mounting holes on the bottom portion of the PCB. These were intended to use with the plastic stand-off types. However, I measured the drill size wrong and consequently the mounting holes are too big to securely hold the PCB with those plastic mounting clips. The drill size for the holes is 5mm on the PCB.

You can still use screw type standoffs if you like, or just fasten the PCB to the Boost pot with some double sided foam tape. You may even be able to mount the PCB flush to the enclosure if you move things around.

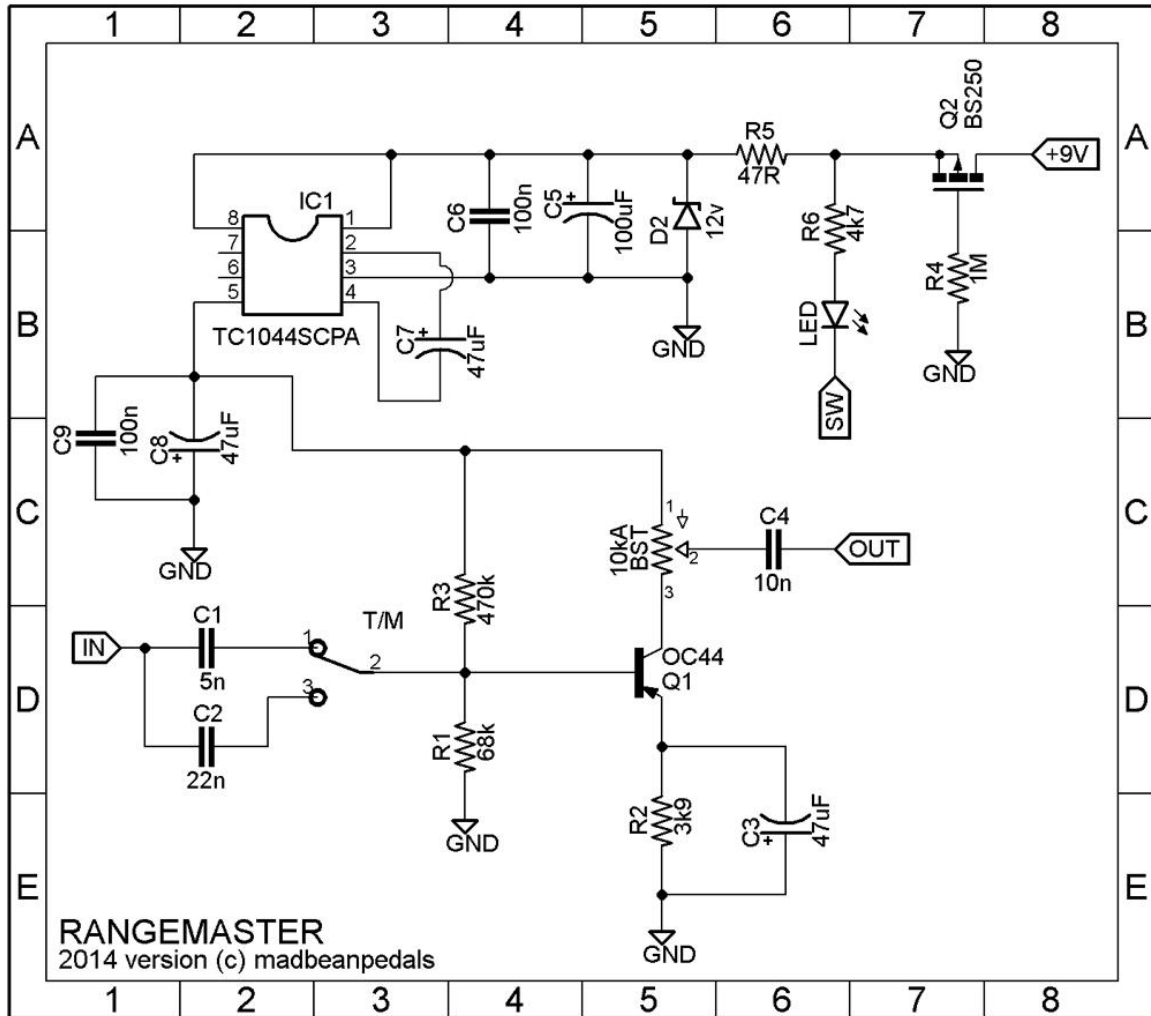
If you want to try stand-offs, these should work:

<http://www.smallbearelec.com/servlet/Detail?no=824>

with these screws:

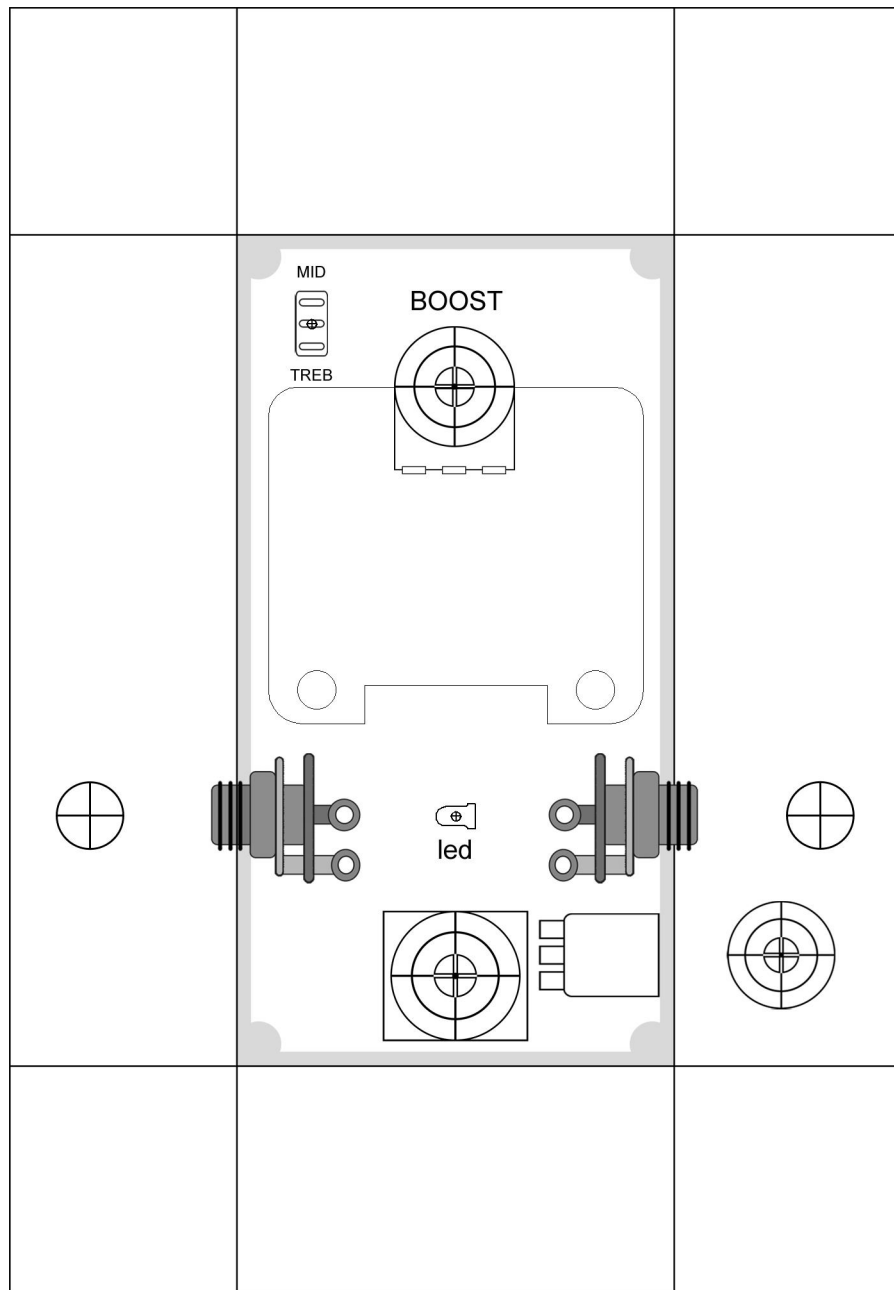
<http://www.smallbearelec.com/servlet/Detail?no=820>

Note that they do require you hot-glue the nuts to the enclosure.



1590B Drill Template

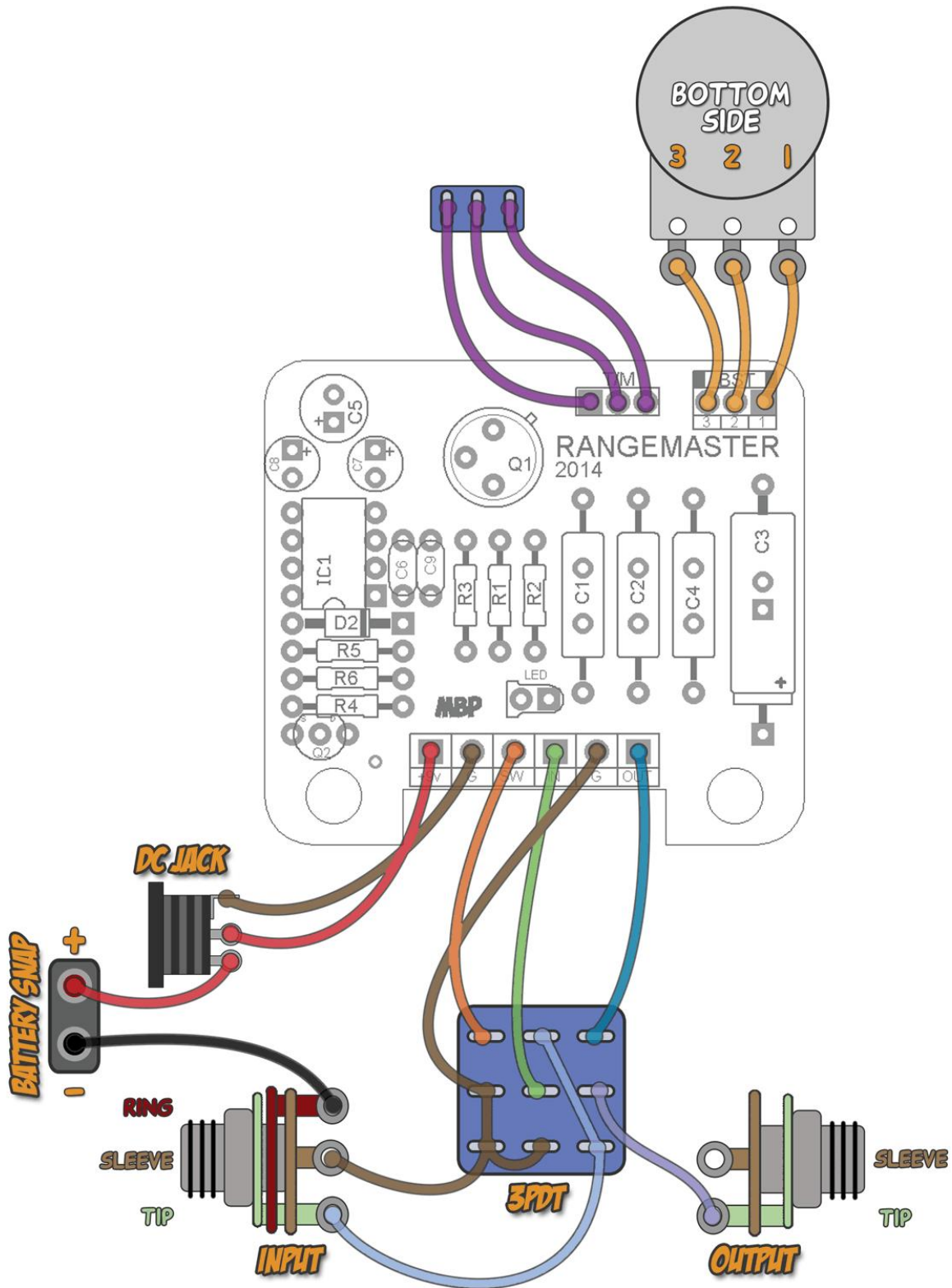
4.64" W x 6.69" H



Shown without battery.

Download the Photoshop file used for this template here:
http://www.madbeanpedals.com/projects/Rangemaster/Rangemaster_Drill.zip

Wiring



Reminder: this project is wired as a regular negative ground effect due to the onboard voltage inverter.

The **Rangemaster** is a classic treble with a long history in the world of guitar effects. Its unique character is that it boosts high frequency content to make notes on the guitar sing when playing. It also works very well in front of a Fuzz Face. This type of effect is most suited for tube based amps and is not recommended for solid state devices. The Rangemaster also allows you to use a switch to increase the boosted frequency range.

BOOST: This control provides over 20dB of gain as it is turned up.

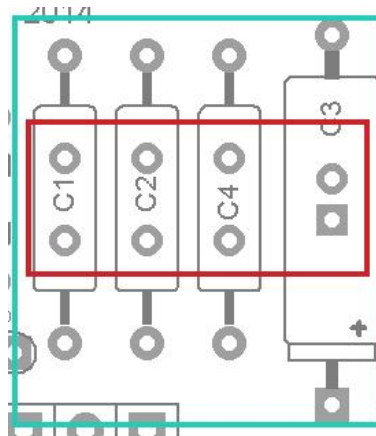
T/M: The Treble/Mids switch allows you to switch between treble boost and a more full range boost.

Notes

This is a positive ground effect! The 2014 version of the Rangemaster project now includes a voltage inverter. This means you can wire the entire effect as negative ground and it does not require any special power supply or cable. The voltage inverter also includes a mosfet protection device (courtesy of RG Keen's notes) to ensure that your expensive germanium transistor cannot be damaged in any way by incorrect polarity.

The stock input cap is 5n. These are pretty hard to come by in the States. You can sub either a 4n7 or 5n6 in its place. If your DMM has a capacitance measure feature, you could pick up a few 5n6 and try to find one that measures closer to 5n. I typically just use 4n7.

The signal caps have extra pads so that you can use either axial or radial type capacitors. The lead spacing for the radial pads is 5mm for film, and 2.5mm for electrolytic. For axial film, the spacing is about 18mm. For axial electrolytic it is 20mm.



You can find a number of suitable transistors for the Rangemaster at www.smallbearelec.com. I personally like the OC44.

For more info on the history and inner workings of the Rangemaster, have a look at R.G. Keen's article: http://www.geofex.com/Article_Folders/Rangemaster/atboost.pdf