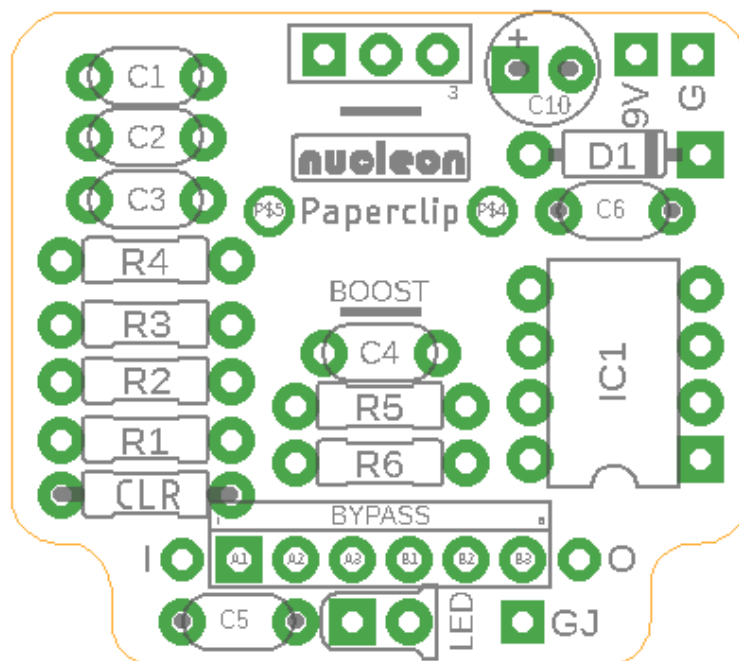
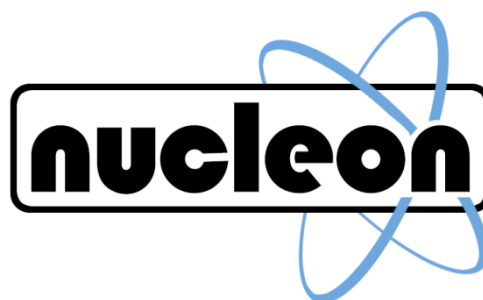


# Nucleon Paperclip Boost

The Paperclip boost is an easy going opamp booster that fits a 1590A enclosure. With the effect on there's a maximum of 20 dB boost. In bypass it acts as buffer. You can use it with a regular 9V supply or 18V for added headroom if you make sure the capacitors are rated for 25V or more. It is transparent, linear, full frequency...insert your favourite buzz word. This would be a perfect stompbox to level match your single coil guitar with your humbucker guitar.



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## BOM

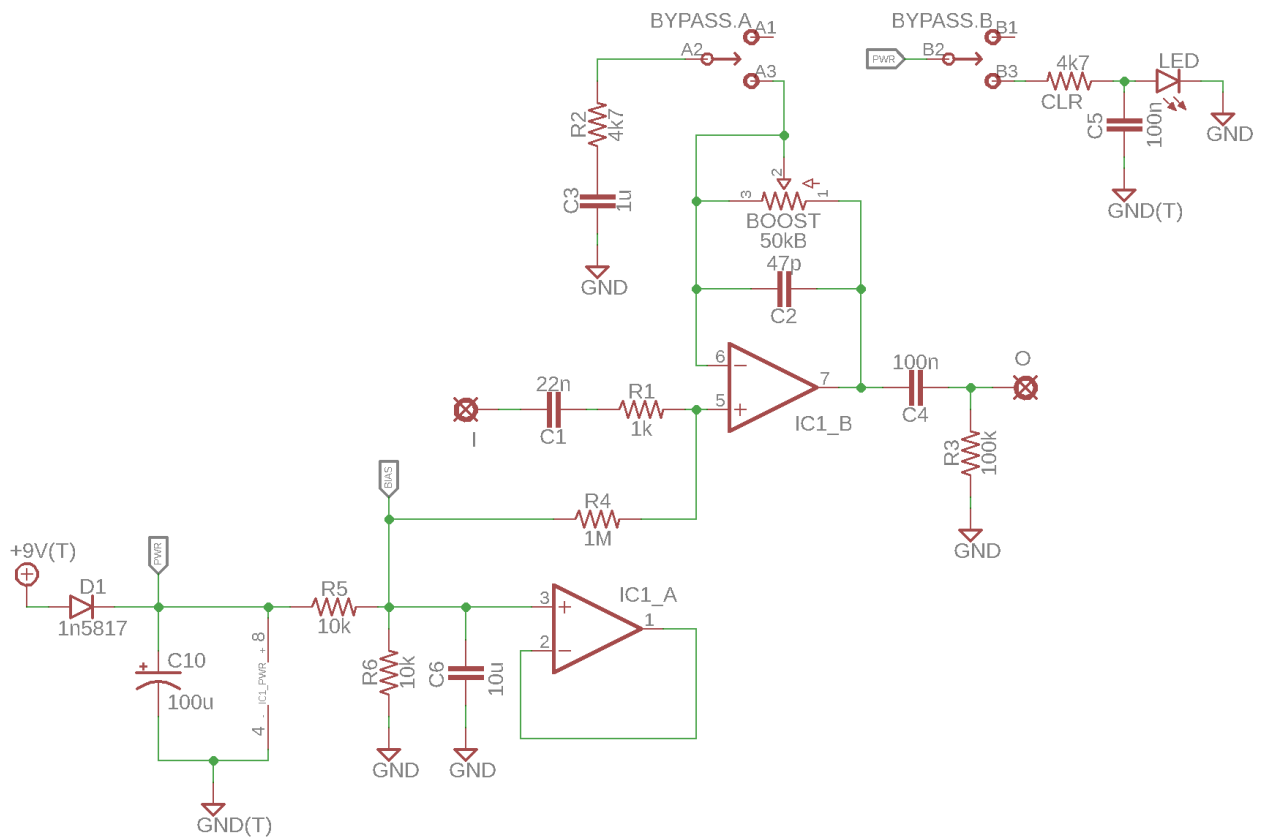
Resistors	
R1	1k
R2	4k7
R3	100k
R4	1M
R5	47k
R6	47k
CLR	3k3 - 100k

Capacitors	
C1	22n
C2	47p
C3	1u
C4	100n
C5	100n MLCC
C6	1 - 10u MLCC
C7, C8, C9	Not there
C10	10u - 100u

Diodes and misc	
D1	15817

Controls	
BOOST	50kB 9mm
Bypass	DPDT Stomp

## Schematic



## NOTES

### A general note

This booster simply amplifies all frequencies important for bass and guitar by the same amount. This is what some people call 'linear' or 'transparent'. Any added distortion to your signal comes either from:

- overdriving the preamp of your amplifier. Often boosters are used for precisely this purpose.
- the booster running out of headroom. In the latter case there will be opamp distortion which is often not desirable. Using an 18V supplies limits opamp distortion by providing more headroom. The voltage gain of the circuit is 10x (20 dB). That means that a 100 mV single coil output won't overdrive the opamp but a high output humbucker might at high boost settings. That shouldn't be a problem really, as your pickups are already driving your amp harder. But it's good to keep in mind.

### Bypass

When the boost is bypassed, the pedal is still in the signal chain as a buffer or line driver. You might notice a little extra top end because of this. To my ears (tested with a strat) this is no problem with this particular circuit. I suggest you try it this way and use the wiring scheme presented at the end of these notes.

However, there are two situations where you may prefer true bypass switching over the buffered function as it is now:

- If you've got a very spikey (say) telecaster and have been using 20 ft high capacitance jazz cables to tame it down, you might notice some ice pick.
- Not all fuzzes like buffers in front of them.

Regarding the top end, you could try lowering the input impedance of the pedal. I would not go lower than 470k with that. You can also defeat the buffer: hotwire A1, A2 and A3 together on the BYPASS strip on the board. That is: the square pad and the two round pads to the right of it. The boost is now always on. Instead of connecting the I en O pads to the jacks, connect them to the lugs of a 3PDT switch and use your favourite true bypass wiring scheme (or a break out board). Run wires from the switch to B2 and B3 pads for LED switching.

### Wiring

I - tip of input jack

O - tip of output jack

GJ - sleeve of output jack

9V - sleeve of power jack

G - center of power jack

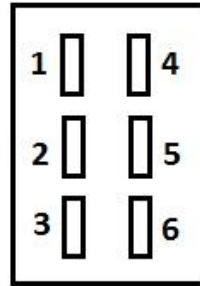
### Bypass DPDT

Two sets of three (1 + 2 + 3 and 4 + 5 + 6)  
corresponding to columns on a DPDT  
switch.

1 and 4: top lug

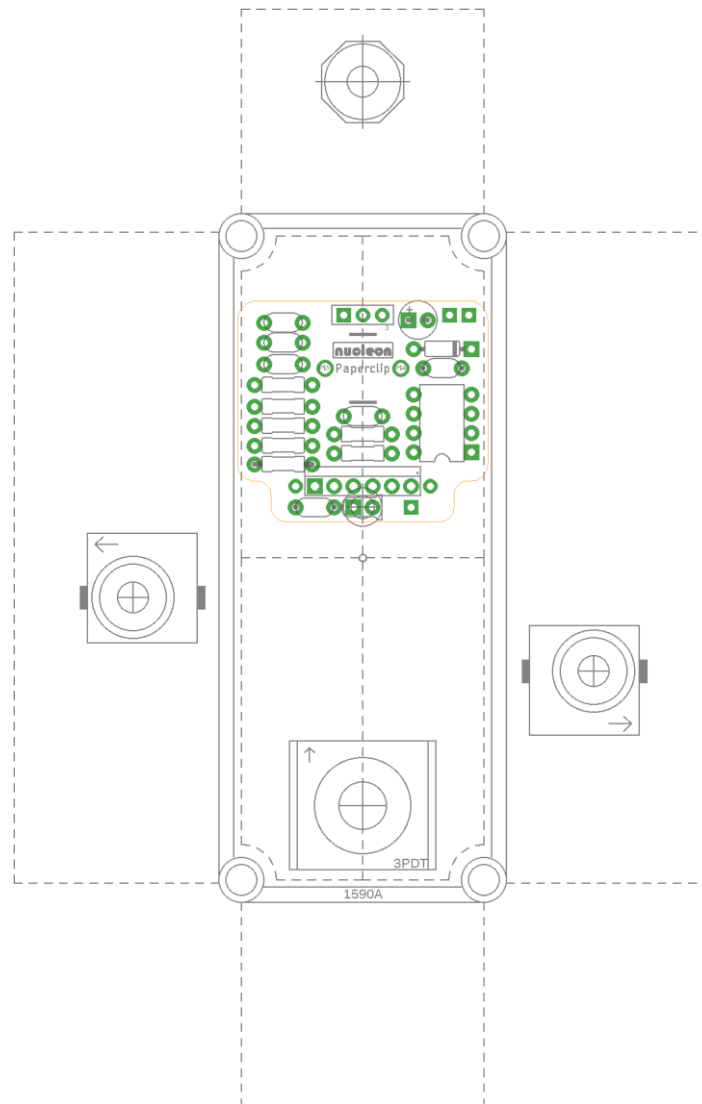
2 and 5: center lug

3 and 6: bottom lug



For quick and easy wiring consider using the Nucleon Bypass board.

## Drilling template



### Drill Sizes

Pots: 7 mm minimum (use 8mm if you need some wiggle room)

Toggle switch: 6mm (7mm for extra wiggle room)

Jacks: 9 or 10 mm

Stomp: 12 or 13 mm (5 inches usually)

DC Jack: 7 mm (small barrel, no switch) to 13 mm (round 'Boss style' switched jacks)