

## N.E.W. – Apostle Build guide

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The N.E.W. Apostle is a Jfet interpretation of a classic Matamp design. “Mode” switches the tone stack between Orange OR120 and Matamp GT120 style. A pair of pads labeled “FAC” allow for a bass cut switch to be wired off-board. Choose evenly spaced values between 1nF and 68nF based on how many positions the switch has. If there’s difficulty sourcing 2n5457 Jfets, many pin compatible Jfets will work, including J201, J113, and MPF102. An LT1054 charge pump is used to generate +18 volts to power the IC’s and +36 volts to power the transistors. Actual voltage may be a bit less as charge pumps tend to have some loss. Transistors should be biased at  $\frac{1}{2}$  of  $V_A$  which will likely be 16-18 VDC.

This guide is intended for people who have some experience building pedals. Component sourcing, component identification, assembly techniques, wiring stomp switches, etc. is not covered. The GCI Brutalist Jr. assembly guide has helpful information for less experienced builders. That guide can be found here: <http://www.kurtballou.com/brutalistjr/>

Don’t forget to connect the ground pad of the PCB to the ground lug of the input, output, and DC power jacks!

Due to the scope of this project, technical support is not available. However, consider joining the GCI DIY PCB Builders group on Facebook to get advice from and share your work with other builders. We require that all group members agree to the rules before being accepted into the group. <https://www.facebook.com/groups/2454786551255317/>

Component values for the PCB as well as some alternate values are listed below. This is a BOM for the PCB only. Resistors and diodes are 6.3mm leg spacing, film and ceramic capacitors are 5.08mm leg spacing, and electrolytic capacitors are 2.54mm leg spacing. I/O jacks, DC jack, switches, enclosure, and knobs are not listed. The schematic and a drill template for a 125BB (1590BBM) sized enclosure are also attached.

<b>Part</b>	<b>Value</b>	<b>Device</b>	<b>Package</b>	<b>Description</b>
R1	1M	6MM.3	R0207/3	6mm Resistors
R2	68k	6MM.3	R0207/3	6mm Resistors
R3	10M	6MM.3	R0207/3	6mm Resistors
R4	2.2k	6MM.3	R0207/3	6mm Resistors
R5	100k	6MM.3	R0207/3	6mm Resistors
R6	27k	6MM.3	R0207/3	6mm Resistors
R7	100k	6MM.3	R0207/3	6mm Resistors
R8	100k	6MM.3	R0207/3	6mm Resistors
R9	2.2k	6MM.3	R0207/3	6mm Resistors
R10	100k	6MM.3	R0207/3	6mm Resistors
R11	27k	6MM.3	R0207/3	6mm Resistors
R12	100k	6MM.3	R0207/3	6mm Resistors
R13	100k	6MM.3	R0207/3	6mm Resistors
R14	1M	6MM.3	R0207/3	6mm Resistors
R15	1.5k	6MM.3	R0207/3	6mm Resistors
R16	220k	6MM.3	R0207/3	6mm Resistors
R17	15k	6MM.3	R0207/3	6mm Resistors
R18	100k	6MM.3	R0207/3	6mm Resistors
R19	1k	6MM.3	R0207/3	6mm Resistors
R20	100k	6MM.3	R0207/3	6mm Resistors
R21	1M	6MM.3	R0207/3	6mm Resistors
R22	100k	6MM.3	R0207/3	6mm Resistors
R23	15k	6MM.3	R0207/3	6mm Resistors
R24	15k	6MM.3	R0207/3	6mm Resistors
R25	100R	6MM.3	R0207/3	6mm Resistors
R26	100k	6MM.3	R0207/3	6mm Resistors
R27	10k	6MM.3	R0207/3	6mm Resistors
D1	1N5817	1N5817	DO41-3	Schottky diode
D2	1N5817	1N5817	DO41-3	Schottky diode
D3	1N5817	1N5817	DO41-3	Schottky diode
D4	1N5817	1N5817	DO41-3	Schottky diode
D5	1N5817	1N5817	DO41-3	Schottky diode
D6	1N5817	1N5817	DO41-3	Schottky diode
C1	47u	501	050_020_1	0.22 - 100uF
C2	10u	072X0352	072X035	0.15 - 1.0uF;
C7	1n	072X0252	072X025	1000pF - 0.47uF
C8	2.2n	072X0252	072X025	1000pF - 0.47uF
C9	10n	072X0252	072X025	1000pF - 0.47uF
C10	330p	072X0252	072X025	1000pF - 0.47uF
C11	2.2n	072X0252	072X025	1000pF - 0.47uF
C12	47u	501	050_020_1	0.22 - 100uF
C13	47n	072X0252	072X025	1000pF - 0.47uF
C14	2.2n	072X0252	072X025	1000pF - 0.47uF
C15	10n	072X0252	072X025	1000pF - 0.47uF
C16	330p	072X0252	072X025	1000pF - 0.47uF
C17	2.2n	072X0252	072X025	1000pF - 0.47uF
C18	68n	072X0252	072X025	1000pF - 0.47uF
C19	47u	501	050_020_1	0.22 - 100uF
C21	47n	072X0252	072X025	1000pF - 0.47uF
C22	47n	072X0252	072X025	1000pF - 0.47uF
C23	10u	501	050_020_1	0.22 - 100uF
C24	2.2n	072X0252	072X025	1000pF - 0.47uF

C25	2.2n	072X0252	072X025	1000pF - 0.47uF
C26	1u	072X0352	072X035	0.15 - 1.0uF;
C27	100u	501	050_020_1	0.22 - 100uF
C28	10u	631	063_025	33 - 220uF
C29	100u	631	063_025	33 - 220uF
C30	10u	631	063_025	33 - 220uF
C31	100u	631	063_025	33 - 220uF
C32	10u	631	063_025	33 - 220uF
C33	100u	631	063_025	33 - 220uF
C34	100p	072X0252	072X025	1000pF - 0.47uF
C35	100p	072X0252	072X025	1000pF - 0.47uF
C38	100p	072X0252	072X025	1000pF - 0.47uF
C39	100p	072X0252	072X025	1000pF - 0.47uF
C40	33p	072X0252	072X025	1000pF - 0.47uF
C41	33p	072X0252	072X025	1000pF - 0.47uF
FAC capacitors	1n-68n			Hand wired
FAC		Rotary switch		Hand wired
MODE		DPDTPCB	DPDT2_PCB	on/on DPDT
IC1	TL072P	TL072P	DIL08	OP AMP
IC2	LT1054	MAX1044	DIL08	Charge Pump
Q1	2N5457	2N5457	TO92-	N-CHANNEL JFET
Q2	2N5457	2N5457	TO92-	N-CHANNEL JFET
Q3	2N5457	2N5457	TO92-	N-CHANNEL JFET
Q4	2N5457	2N5457	TO92-	N-CHANNEL JFET
RD1	100kB	POTTRIM	B25P	Potentiometers
RD2	100kB	POTTRIM	B25P	Potentiometers
RD3	100kB	POTTRIM	B25P	Potentiometers
RD4	100kB	POTTRIM	B25P	Potentiometers
GAIN	1MA	POT16MM	16MM	Potentiometers
TREBLE	1MA	DUALGANG16MM_DUAL	16MM_DUAL	Potentiometers
BASS	1MA	DUALGANG16MM_DUAL	16MM_DUAL	Potentiometers
BST	5kC	POT16MM	16MM	Potentiometers
VOL	1MA	POT16MM	16MM	Potentiometers
V		PAD	SQUARE	PAD
G		PAD	SQUARE	PAD
I		PAD	SQUARE	PAD
O		PAD	SQUARE	PAD
L+		PAD	SQUARE	PAD
L-		PAD	SQUARE	PAD
1D		PAD	SQUARE	Bias test point
2D		PAD	SQUARE	Bias test point
3D		PAD	SQUARE	Bias test point
4D		PAD	SQUARE	Bias test point



