

GOD CITY INSTRUMENTS – HM-1 V1.0 Build guide

Inspired by the pedal stacking of early Swedish death metal pioneers, the God City Instruments (GCI) HM-1 combines the distortion and tone stack of a DS-1 with a boost-only version of the HM-2 tone stack.

For this humble pedal tweeker's dissertation on HM-2 philosophy please check out the Murdock Plus [build guide](#). The tone stack of the DS-1 is very similar to that of a Big Muff. Modifications for this are well documented, and the [Duncan Tone Stack Calculator](#) is a great resource for tuning it to the desired response.

This pedal is an easy build, but 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/>

Available separately is the GCI 3PDT utility PCB for PCB pin 3PDT footswitches. This PCB makes footswitch wiring quick and easy. Not compatible with solder lug style switches.

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

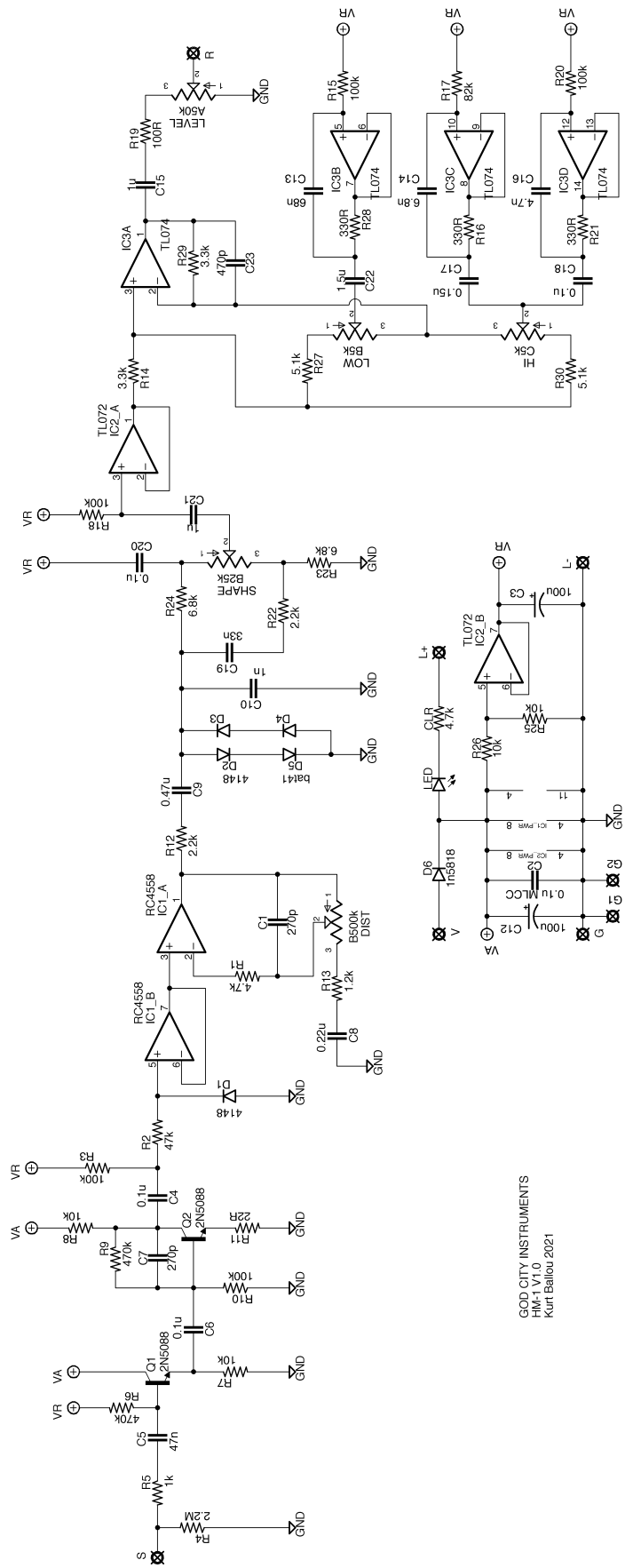
Due to the scope of this project, technical support is not available. However, consider joining the GCI DIY PCB Builders group on Facebook to get advice from and share your work with other builders. We require that all group members agree to the rules before being accepted into the group.

<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, switch, enclosure, and knobs are not listed. The schematic and a drill template for a 125BB (1590BBM) enclosure are also attached.

Part	Value	Description	Substitute	Substitution Notes
C1	270p	MLCC		
C2	0.1u MLCC	MLCC		
C3	100u	electrolytic cap		
C4	0.1u	film cap		
C5	47n	film cap	10n-100n	affects input HPF along with R6
C6	0.1u	film cap		
C7	270p	MLCC	100p-470p	affects high freq of first stage affects HPF of gain stage along with R13
C8	0.22u	film cap	0.1u-0.47u	
C9	0.47u	film cap		
C10	1n	film cap		
C12	100u	electrolytic cap		
C13	68n	film cap		
C14	6.8n	film cap		
C15	1u	film cap		
C16	4.7n	film cap		
C17	0.15u	film cap		
C18	0.1u	film cap		
C19	33n	film cap		
C20	0.1u	film cap		
C21	1u	film cap		
C22	1.5u	film cap		
C23	470p	MLCC		
LED	L1	3mm LED		
D1	1n4148	small signal diode	1n456a, 1n914, 1n5818, mosfet	clipping diode
D2	1n4148	small signal diode	1n456a, 1n914, 1n5818, mosfet	clipping diode
D3	1n4148	small signal diode	1n456a, 1n914, 1n5818, mosfet	clipping diode
D4	bat41	small signal diode	1n456a, 1n914, 1n5818, mosfet	clipping diode
D5	bat41	small signal diode	1n456a, 1n914, 1n5818, mosfet	clipping diode
D6	1n5818	schottky diode	1n5817, 1n4001	reverse polarity protection
IC1	RC4558	dual op amp	TL072, MC1458	
IC2	TL072	dual op amp	TLC2272, NE5532	
IC3	TL074	quad op amp	TLC2274, LMC6484	
Q1	2N5088	NPN BJT	2n3904, 2n4401, BC550	check pinouts (BC550 is backwards)
Q2	2N5088	NPN BJT	2n3904, 2n4401, BC550	check pinouts (BC550 is backwards)
CLR	4.7k	1/4 watt resistor		
R1	4.7k	1/4 watt resistor		
R2	47k	1/4 watt resistor		
R3	100k	1/4 watt resistor		
R4	2.2M	1/4 watt resistor	1M-10M	input pull down resistor
R5	1k	1/4 watt resistor		
R6	470k	1/4 watt resistor	270k-1M	affects input HPF along with C5
R7	10k	1/4 watt resistor		
R8	10k	1/4 watt resistor		
R9	470k	1/4 watt resistor		

R10	100k	1/4 watt resistor		
R11	22R	1/4 watt resistor		
R12	2.2k	1/4 watt resistor		
R13	1.2k	1/4 watt resistor	1k-2.2k	affects HPF of gain stage along with C8
R14	3.3k	1/4 watt resistor		
R15	100k	1/4 watt resistor		
R16	330R	1/4 watt resistor		
R17	82k	1/4 watt resistor		
R18	100k	1/4 watt resistor		
R19	100R	1/4 watt resistor		
R20	100k	1/4 watt resistor		
R21	330R	1/4 watt resistor		
R22	2.2k	1/4 watt resistor		
R23	6.8k	1/4 watt resistor		
R24	6.8k	1/4 watt resistor		
R25	10k	1/4 watt resistor		
R26	10k	1/4 watt resistor		
R27	5.1k	1/4 watt resistor		
R28	330R	1/4 watt resistor		
R29	3.3k	1/4 watt resistor		
R30	5.1k	1/4 watt resistor		
DIST	B500k	16mm potentiometer	B250k-B1M	gain
SHAPE	B25k	16mm potentiometer		
HI	C5k	16mm potentiometer	B5k	taper will stink, but it will work
LOW	B5k	16mm potentiometer		
LEVEL	A50k	16mm potentiometer	A100k	
S	Send to PCB	PAD		
L+	LED+	PAD		
L-	LED-	PAD		
R	Return from PCB	PAD		
V	9v input	PAD		
G	Ground	PAD		
G1	Ground	PAD		
G2	Ground	PAD		



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 Kurt Ballou 2021

