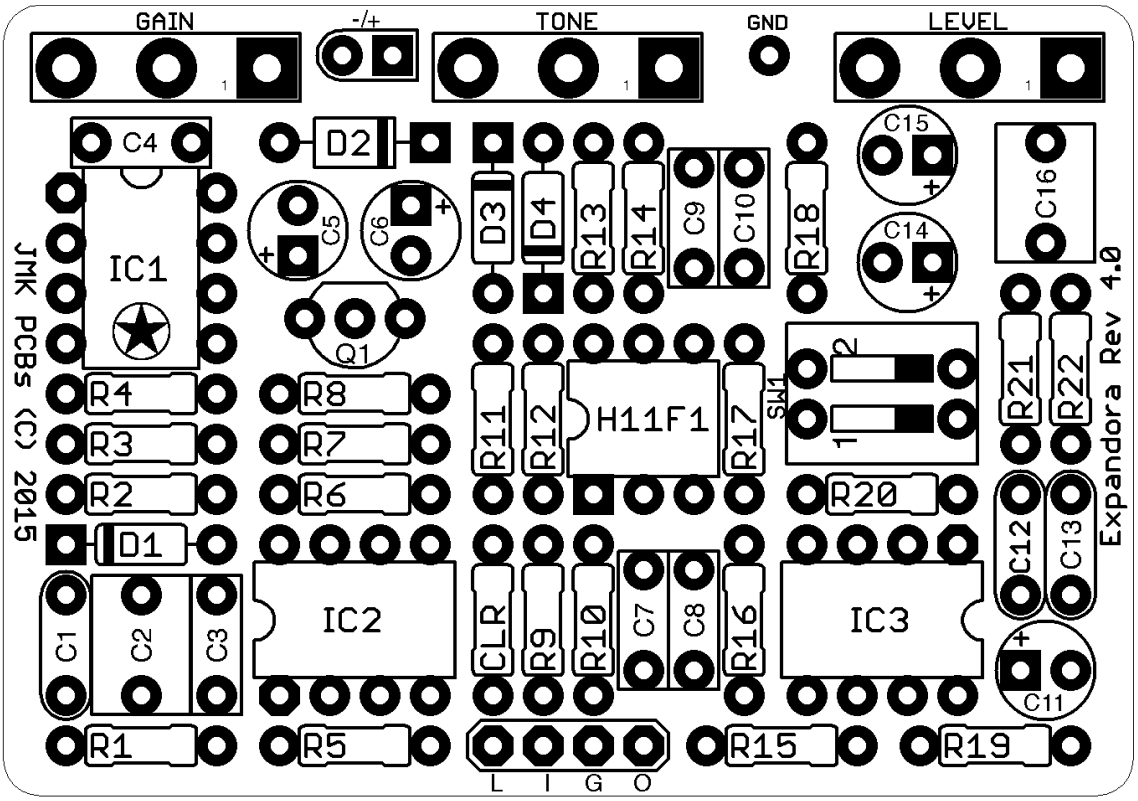
JMK PCBS PRESENTS...

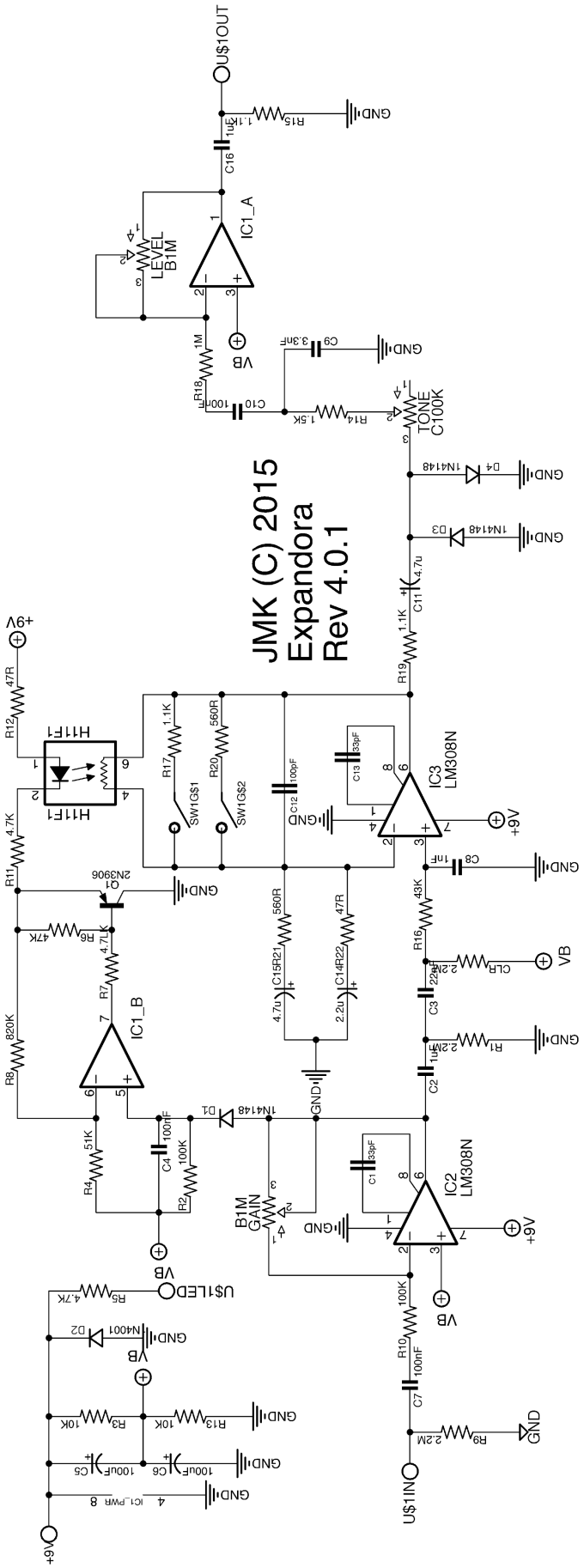
EXPANDORA

PCB AND SCHEMATIC ARTWORK (C) 2015 JMK PEDALS

VERSION 4.0.2: 27/11/2015



Resistors						Capactitors				Semiconductors	
R1	2.2M	R9	2.2M	R17	1.1K	C1	33p	C9	3.3n	D1, D3, D4	1n4148
R2	100K	R10	100K	R18	1M	C2	1u	C10	100n	D2	1N4001
R3	10K	R11	4.7K	R19	1.1K	C3	22n	C11	4.7u	IC1	JRC4558
R4	51K	R12	47R	R20	560R	C4	100n	C12	100p	IC2, IC3	LM308N
R5	4.7K	R13	10K	R21	560R	C5	100u	C13	33p	LDR1	H11F1
R6	47K	R14	1.5K	R22	47R	C6	100u	C14	2.2u	Q1	2N3906
R7	4.7K	R15	1.1K	CLR	2.2M	C7	100n	C15	4.7u	Potentiometer	
R8	820K	R16	43K			C8	1n	C16	1u	LEVEL, GAIN	B1M
										TONE	C100K
										SW1	DIP2



Build Notes

• The Expandora is a unique circuit that features an ingenious method for creating a wide variety of distortion, from light overdrive through to crazy fuzz.

• ***Special Note*** - the CLR marking is on the wrong Resistor! R5 is ACTUALLY the current limiting resistor for the LED connection. The resistor marked CLR should be 2.2M, that's not a mistake. This is a silkscreen mistake that will be correct on Rev 4.1.

• The Vactrol originally required was the Sharp PC419. However, this vactrol has become very difficult to find at a reasonable price. Because of the rarity of this chip, we have proposed an alternate Vactrol in the H11F1, found at Mouser Electronics and elsewhere. One could also 'roll your own' vactrol by partnering an LED and LDR sourced separately. **We highly recommend socketing!** Socketing allows you to try another vactrol to see if it gives you a better response.

• Hooking up the PCB is pretty simple, but to clarify: L = the connection for the + end of an LED (CLR is R21); I = PCB Input; SG = Ground for the Switch; O = PCB Output; + = 9V input; - = Ground for DC Jack; IG = Extra Ground for 1/4" Jack

• It should be noted that there are several odd parts in the BOM for this project. Below are some common substitutes for these parts. You can find precise parts if you would like, but in most cases the common values are going to give the same tonal response.

Part Number	Original Value	Common Substitute
C1, C13	33pF	30pF
R16	43K	39K/47K
R15, R17, R19	1.1K	1K/1.2K

• Like with most overdrive pedals, the ICs used are an integral part of the sound. While many Single Op Amps may be used, the LM308 has a very specific pinout and is not a pin-for-pin swap for other single op-amps. Keep in mind that another choice may or may not be better, the choices we make in this area are subjective. **We highly recommend socketing your transistors and ICs!** Socketing allows you to switch your Semiconductors easily if they fail, and also allows you to swap out and try other parts you like best. For IC3, try a TL072, OP2134, TL2272, etc. We recommend leaving IC1/2 as an LM308, but an NE5534 will work in a pinch.

• The DIP switch on the PCB can be used, but a pair of SPST toggle switches could be used to mount the control externally. These control a pair of resistors that are in parallel with the LDR in the feedback loop of IC2. By adding extra resistance, you increase the distortion available from mild overdrive, to medium distortion, to heavy duty fuzz.

• Consider socketing and experimenting with the values of R17 and R20 for variations on the level of distortion the DIP switch adds. Also note that one of the potential settings was known as the 'forbidden' setting, as it was terrible sounding.

• Credit should go to Gus Smalley who created the schematic this project is derived from. Thanks to Gus for his work previous to this project being released. Also, thanks to R.G Keen who also put work into translating the Expandora.

True Bypass Wiring Diagram