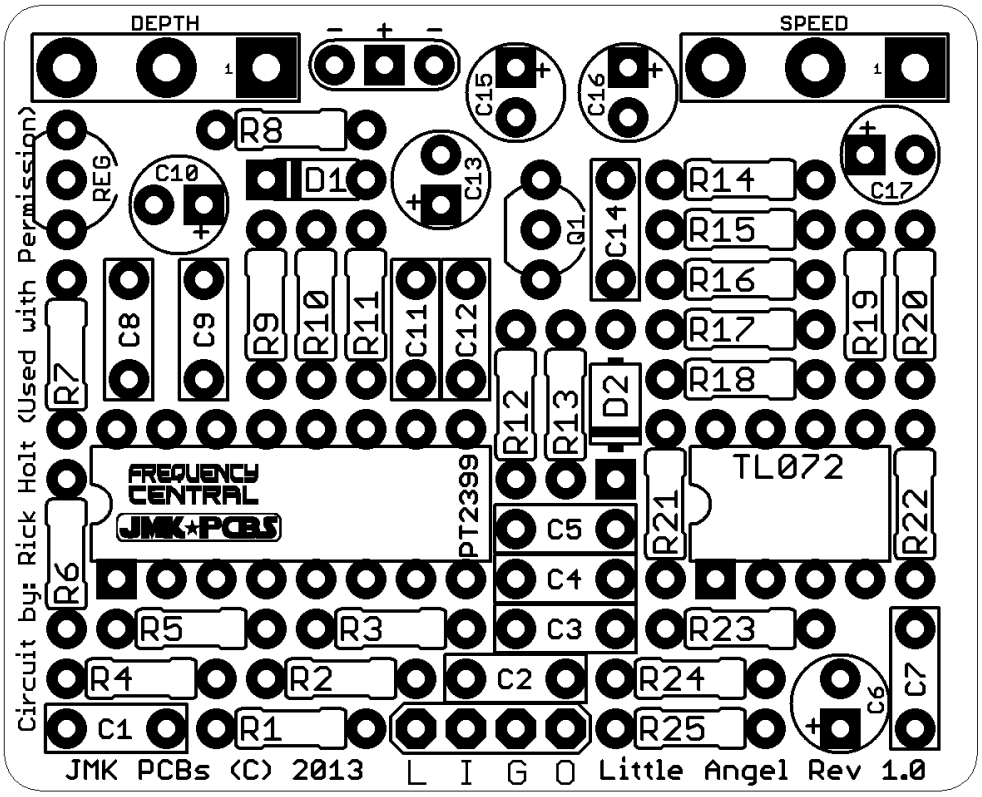
JMK PCBS PRESENTS...

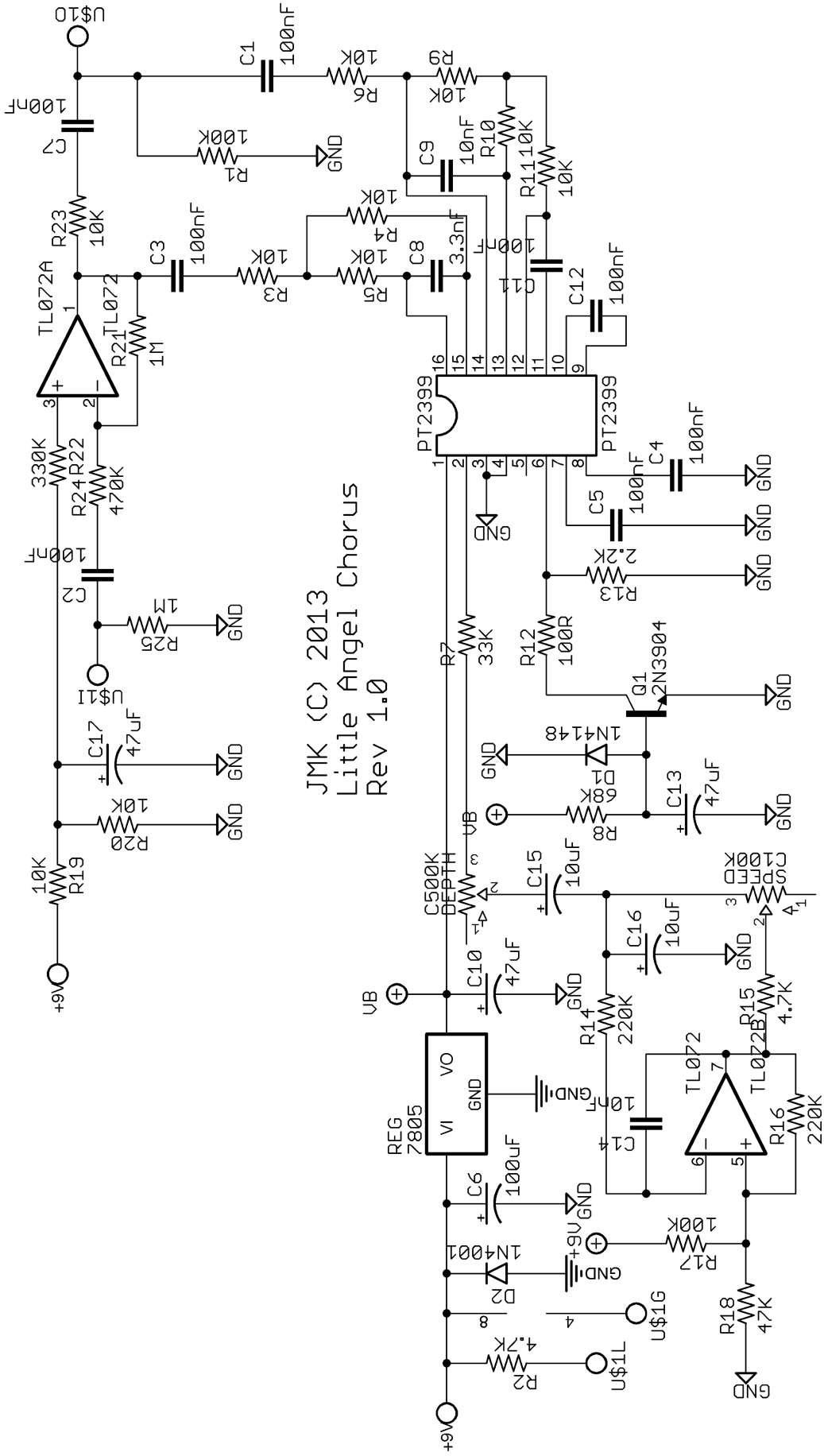
LITTLE ANGEL

PCB AND SCHEMATIC ARTWORK (C) 2014 JMK PEDALS

VERSION 1.0: 10/4/2014



Resistors						Capactitors				Semiconductors	
R1	100K	R11	10K	R21	1M	C1	100n	C10	47u	IC1	PT2399
R2	CLR	R12	100R	R22	330K	C2	100n	C11	100n	IC2	TL072
R3	10K	R13	2.2K	R23	10K	C3	100n	C12	100n	REG	78L05
R4	10K	R14	220K	R24	470K	C4	100n	C13	47u	Q1	2N3904
R5	10K	R15	4.7K	R25	1M	C5	100n	C14	10n	Diodes	
R6	10K	R16	220K			C6	100u	C15	10u	D1	1N4148
R7	33K	R17	100K			C7	100n	C16	10u	D2	1N4001
R8	68K	R18	47K			C8	3.3n	C17	47u	Potentiometer	
R9	10K	R19	10K			C9	10n			SPEED	C100K
R10	10K	R20	10K							DEPTH	C500K



Build Notes

• The Little Angel is a Digital Chorus designed around the popular DIY IC, the PT2399. The circuit's designer is Rick Holt, also known as 'frequency central.' This version of his circuit has been authorized by him to be produced by JMK PCBs. You can also find it on his website (frequencycentral.co.uk).

• Digital Chorus is much less expensive to build than classic Analog circuits because of two reasons: a) many fewer parts are needed, and b) the chips required are still in production and fairly easy to acquire. However, Digital Chorus based on the PT2399 can sometimes be a complicated because of the 'lockup' that PT2399's sometimes experience - the failure of the chip to function properly. Please be aware that you may need to try several PT2399 chips from different suppliers or different batches if you do experience issues with your chip. Smallbear Electronics has a supply of quality PT2399 chips, though they are expensive.

• Digital Chorus pedals that utilize a PT2399 chip are sometimes prone to 'lockup,' or in other words, the PT2399 chip stops working correctly. If this happens to you, remove the chip from the circuit (hopefully you've socketed it) and then reinstall it. If your PT2399 is still locked, try installing the chip on a breadboard and ground each pin. Lockup occurs in some chips, and not in others. If your copy of the Little Angel gives you issues, try multiple PT2399's to see if you can find one that is stable.

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

• As is normal in DIY pedals, we recommend fairly common semiconductors. There are many transistors and ICs that could be used, and if you do choose to use another type than those recommended in the BOM, please keep in mind the options we've recommended and compare the pinouts to orient your parts correctly. **We highly recommend socketing your transistors and ICs!** This will allow you to try different chips and transistors out, as well as easily replace them if they do not function correctly.

True Bypass Wiring Diagram