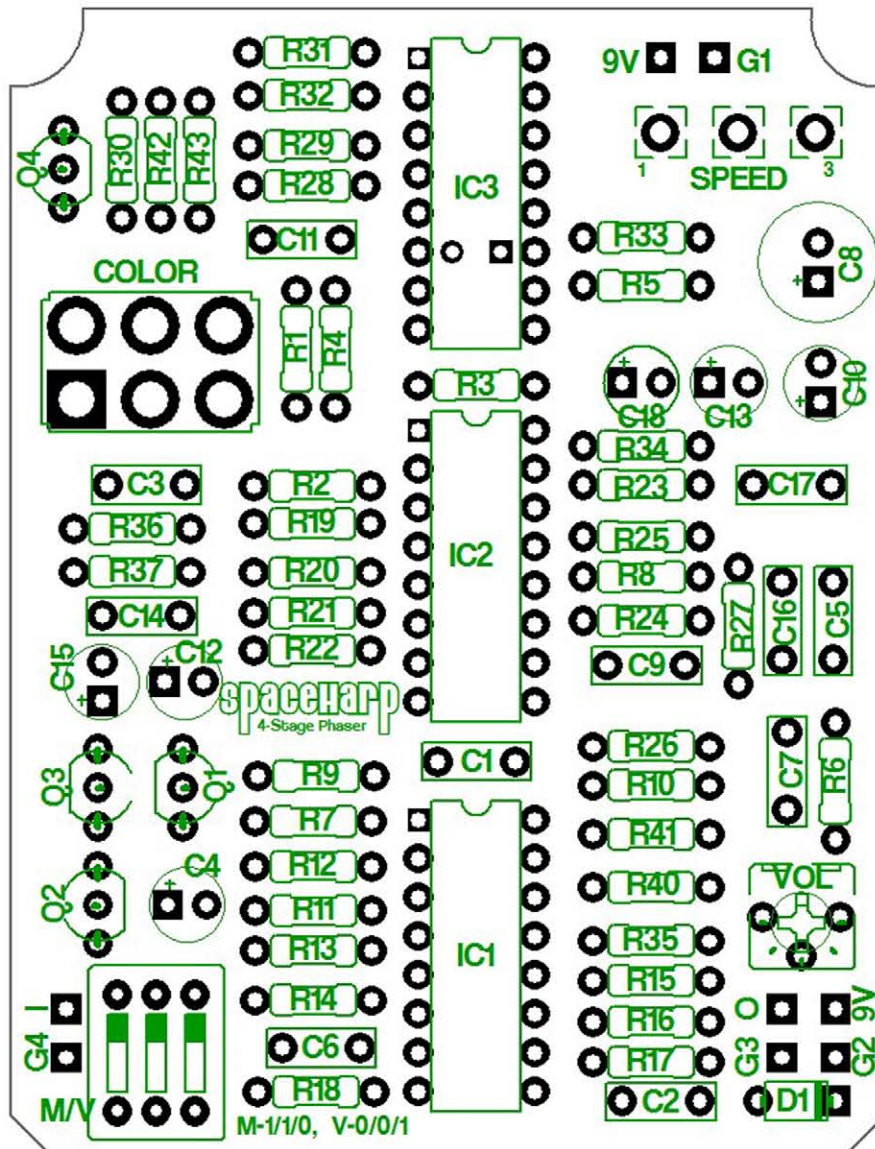


# spaceHarp

## 4-Stage Phaser

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The SpaceHarp is a 4 stage DIY phaser project based on the 70's EHX V1 Small Stone, utilizing 3 x Dual OTA's rather than the 6 x original out-of-production and hard to source CA3094, while retaining the same sounds and functionality.

Extra features include an optional DIP switchable or hard-wired J-FET input buffer to prevent loading and high loss of the original circuit and a transistor output boost with internal trimmer for set-and-forget makeup volume to overcome the original's substantial volume drop.

# Bill of Materials

Part #	Value	Part #	Value
R1	100k *	C1	6n8 *
R2	1M	C2	6n8 *
R3	10k	C3	6n8 *
R4	1k	C4	1u
R5	27k *	C5	100n
R6	27k *	C6	6n8 *
R7	27k *	C7	6n8 *
R8	270k	C8	470u
R9	100r	C9	6n8 *
R10	15k	C10	10u
R11	1k8	C11	47n
R12	27k	C12	1u
R13	27k	C13	47u
R14	10k	C14	100n
R15	1k8	C15	1u
R16	27k	C16	100n
R17	27k	C17	100n
R18	10k	C18	47u
R19	1k8		
R20	27k	D1	1n4001
R21	27k		
R22	10k	Q1	2N5087
R23	1k8	Q2	2N5088
R24	27k	Q3	2N5457
R25	27k	Q4	2N5088
R26	10k		
R27	10k	IC1	LM13700N
R28	180k	IC2	LM13700N
R29	100k	IC3	LM13700N
R30	100k		
R31	270k	COLOR	DPDT
R32	10k	M/V	DIP3
R33	10k		
R34	10k	SPEED	1MC
R35	1M	VOL	100k tr
R36	10k		
R37	1M		
R40	470k		
R41	47k		
R42	390r		
R43	10k		

\* See pot mods on following page

\* See univibe cap mods on following page

## Resistor/Capacitor Shopping List

### Resistors

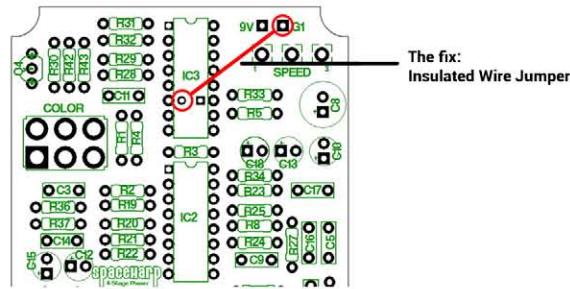
1x 100r  
 1x 390r  
 1x 1k  
 4x 1k8  
 11x 10k  
 1x 15k  
 11x 27k  
 1x 47k  
 3x 100k  
 1x 180k  
 2x 270k  
 1x 470k  
 3x 1M

### Capacitors

6x 6n8 film  
 1x 47n film  
 4x 100n film  
 3x 1uF electrolytic  
 1x 10u electrolytic  
 2x 47u electrolytic  
 1x 470u (or 220u) electrolytic

## Notes:

- \*IMPORTANT\*** There is a small mistake on this v1 pcb that essentially leaves the C8 filtering cap unconnected to ground. It is, however, connected to the gnd pad on the top of the pcb, so you can easily connect that pad to any other gnd point on the pcb (such as the round pad under IC3 or any other unused ground pad) and that will bring it into the circuit. See below.
- 220u may be subbed for C8
- The modern/vintage dip3 can be hard wired with jumpers for either mode if you want to omit the dipswitch. See below.
- C18 can be installed either in its silkscreen position or on the rear of the pcb in back of IC3. The latter really only needs to be done if there is audible ticking (unlikely), as soldering the cap close as possible to the IC pins could be more effective.
- I used manufacturer part # NJM13700D from mouser. LM13700, LM13600 and NE5517 will also work.
- Q3 is the buffer so many jfets will most likely work fine, just watch the pinout as always.



## JakeFuzz mods:

"Univibe" cap changes option:

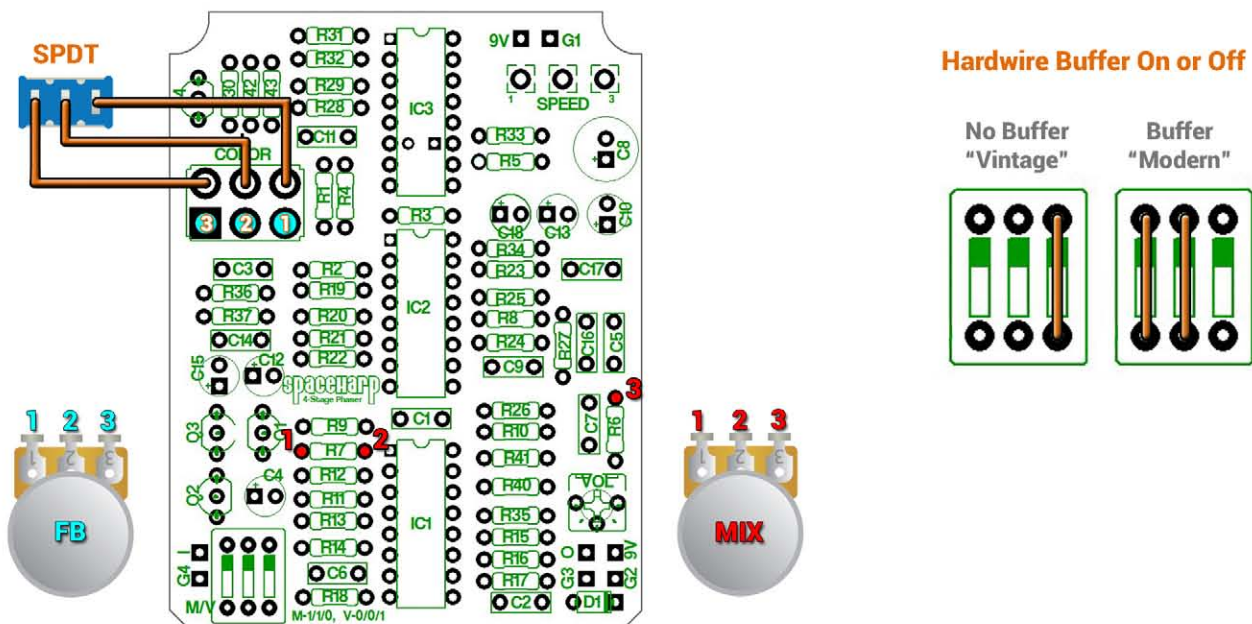
- C1 = 470pF
- C2 = 220nF
- C3 = ~4n7 - 22nF
- C6 = 15nF
- C7 = ~4n7 - 22nF
- C9 = 4.7nF

Feedback control option: pads shown in blue.

Omit R1, replace R5 with something low like 1k. Install an on/on SPDT switch in the top 3 mounts of the dpdt pads. Wire a 100KB pot to the lower 3 DPDT pads- 3, 2, 1 left to right.

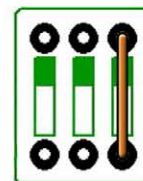
Output mix control option: pads shown in red.

Omit R6 and R7 and wire another 100KB switch to the pads, lug numbers shown in the graphic below.

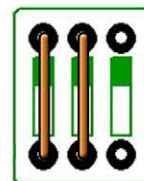


## Hardwire Buffer On or Off

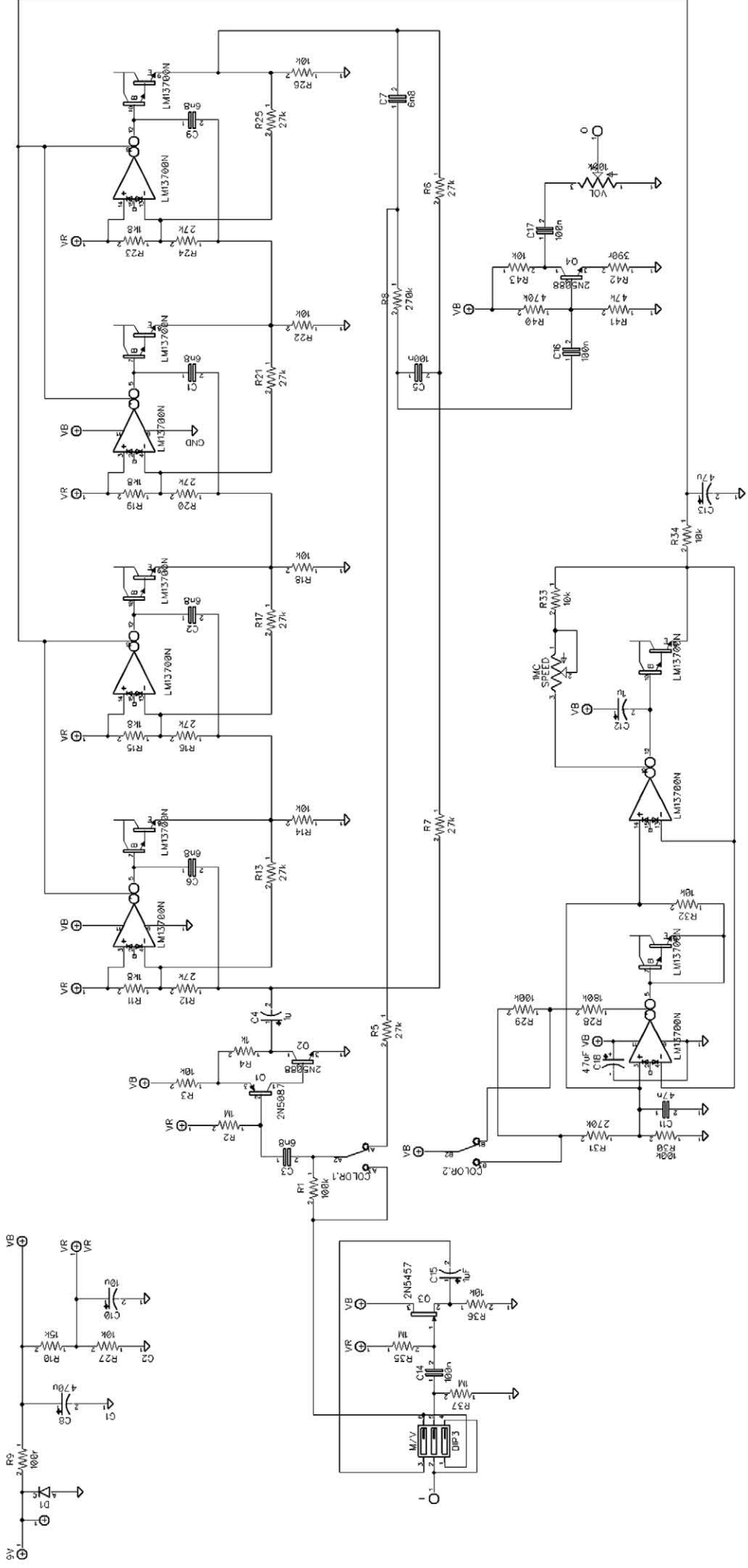
No Buffer  
"Vintage"



Buffer  
"Modern"



# spaceharp



drawn by Haberdasher

# Drill Marks 125B

These are approximate and untested, so PLEASE measure carefully before drilling.

