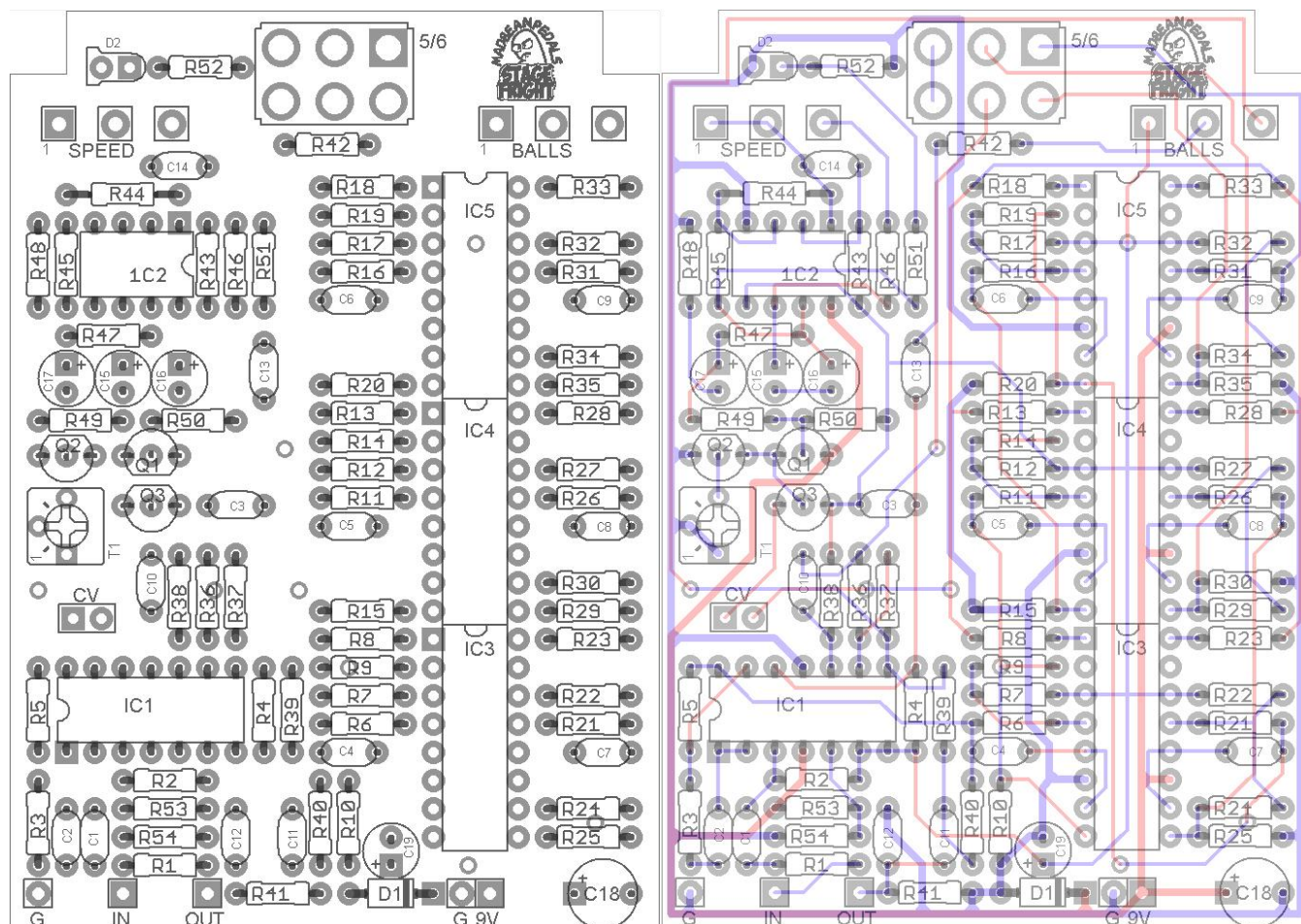


STAGE FRIGHT

FX Type: Phaser

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2.3"W x 3.25" H



A short video demo of the Stage Fright is available here: <http://www.youtube.com/watch?v=nZwEXghYrp8>

(Sorry: the guitar was a little out of tune – hate that!)

Stage Fright PCBs purchased from madbeanpedals may be used for small quantities of commercial pedal building (bulk discounting on PCBs is not offered). You may not, however, offer these PCBs for commercial resale (redistribution) or as part of a “kit”.

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B.O.M.

Resistors		Resistors		Caps		Diodes	
R1	10k	R28	1k	C1	10n	D1	1N4001
R2	1M	R29	39k	C2	220n	D2	LED
R3	33k	R30	20k	C3	220pF	Transistors	
R4	62k	R31	39k	C4	1n	Q1	2N3904
R5	47k	R32	1k5	C5	1n	Q2	2N5457
R6	39k	R33	1k	C6	1n	Q3	2N3906
R7	1k5	R34	39k	C7	1n	IC's	
R8	1k	R35	20k	C8	1n	IC1	TL074
R9	39k	R36	390k	C9	1n	1C2	TL062
R10	20k	R37	390k	C10	1n	IC3 - IC5	LM13700
R11	39k	R38	200k	C11	220n	Switch	
R12	1k5	R39	10k	C12	3n3	5/6 SW	DPDT (ON/ON)
R13	1k	R40	10k	C13	220n	Trimmer	
R14	39k	R41	1M	C14	10n	T1	10k
R15	20k	R42	120k	C15	10uF	Pots	
R16	39k	R43	100k	C16	10uF	BALLS	1MC
R17	1k5	R44	300k	C17	10uF	SPEED	1MC
R18	1k	R45	100k	C18	220uF		
R19	39k	R46	10k	C19	47uF		
R20	20k	R47	30k				
R21	39k	R48	3k				
R22	1k5	R49	30k				
R23	1k	R50	2k				
R24	39k	R51	4k7				
R25	20k	R52	4k7				
R26	39k	R53	100k				
R27	1k5	R54	100k				

Shopping List

QTY	VALUE	TYPE	RATING	DIM
4	100k	Metal/Film	1/4W	
4	10k	Metal/Film	1/4W	
1	120k	Metal/Film	1/4W	
6	1k	Metal/Film	1/4W	
6	1k5	Metal/Film	1/4W	
2	1M	Metal/Film	1/4W	
1	200k	Metal/Film	1/4W	
6	20k	Metal/Film	1/4W	
1	2k	Metal/Film	1/4W	
1	300k	Metal/Film	1/4W	
2	30k	Metal/Film	1/4W	
1	33k	Metal/Film	1/4W	
2	390k	Metal/Film	1/4W	
12	39k	Metal/Film	1/4W	
1	47k	Metal/Film	1/4W	
2	4k7	Metal/Film	1/4W	
1	62k	Metal/Film	1/4W	
1	220pF	Ceramic	16v	5mm
3	10uF	Electrolytic	16v	2.5mm
1	220uF	Electrolytic	16v	5mm
1	47uF	Electrolytic	16v	2.5mm
2	10n	Film	16v	5mm
7	1n	Film	16v	5mm
3	220n	Film	16v	5mm
1	3n3	Film	16v	5mm
1	1N4001	Diode	1W	
1	2N3904	Transistor		
1	2N5457	Transistor		
1	2N3906	Transistor		
1	TL074	IC		DIP
1	TL062	IC		DIP
3	LM13700	IC		DIP
1	DPDT (ON/ON)	Switch		Solder Lug
1	10k	Trimmer		Bourns 3362P
2	1MC	Pots	1/4W	PCB mount

Type	QTY	Link
1MC pots	2	http://www.smallbearelec.com/servlet/Detail?no=692
TL074	1	http://www.smallbearelec.com/servlet/Detail?no=198
TL062	1	http://www.smallbearelec.com/servlet/Detail?no=195
DPDT	1	http://www.smallbearelec.com/servlet/Detail?no=40
LM13700	3	http://www.mouser.com/ProductDetail/Texas-Instruments/LM13700N-NOPB/?qs=sGAEpiMZZMtCHixnSjNA6JlKxGj6zye%252b3rByxdZFJy4%3d
LM13600	These can be subbed for 13700 but may be noisier	http://www.smallbearelec.com/servlet/Detail?no=224
10k Trimmer	1	http://www.mouser.com/ProductDetail/Bourns/3362P-1-103LF/?qs=sGAEpiMZZMvygUB3GLcD7k%252bod3ZqvEIQboRRPdOKB6M%3d
10k Trimmer	This one will work but be a little large for the space	http://www.smallbearelec.com/servlet/Detail?no=160

Note the "C" in 1MC means reverse audio!

The **Stage Fright** is a faithful recreation of the often overlooked, but very musical, Maestro Phaser. Take a moment to Google™ the Maestro Phaser to behold its wonderful, very “70’s”, custom enclosure. It is massive! The entire enclosure is basically the footswitch and is bookmarked by two rotary controls. These were meant to be adjusted with your feet (probably not at the same time unless you were *really* high). Obviously, it is next to impossible to recreate this aspect of the Phaser, but we can at least make an effort to copy the circuit and put it in the much more reasonable 125B enclosure.

The Stage Fright is an OTA-based phaser (stands for Operational Transducer) which has selectable stages. Each phase stage is comprised of ½ of the OTA chip, with the filters being swept by an LFO. The original Phaser was comprised of five phase stages made up of the obsolete CA3094 chips. The Stage Fright instead employs the readily available and inexpensive LM13700 chip in its place. Since each chip has two transducers on it, this affords us the ability to have five OR six phase stages. And, believe it or not, these actually have a distinct character.

The Stage Fright is not a clone of the later Stage Phaser by Maestro. This iteration was very similar to the original with the addition of a ramp on/off feature and a knob that selected between preset Speeds.

Controls

SPEED: Sets the rate of the phase sweep from slow to fast.

BALLS: Sets the amount of feedback (phase output fed back to phase input).

T1: Sets the maximum depth of the LFO.

Notes

D2 is an external LED that will pulse approximately to the speed of the LFO. It can be mounted directly to the PCB without the use of a bezel attachment on the enclosure, if you like.

C12 is an optional 3n3 cap to signal ground at the output of the effect. This was copied from the later Stage Phaser. It will reduce some high end frequencies resulting from the phaser. I personally like this, but you should socket this position and test it out.

There are two pads marked “CV” on the PCB which correspond to the “CV” switch on the schematic. This was included to offer the option of disconnecting the LFO and using an alternative control voltage input such as a sequencer (it may have some integration with the upcoming Dig Dug2 project). For the time being, you should jumper these two pads until this mod idea is more fully realized.

Calibrating the LFO

The T1 trimmer is part of the buffering network for the output of the LFO. It more or less sets the maximum depth of the phase. This is a “set and forget” option—I do not recommend trying to make this an external control. Set the Speed control to halfway and Balls fully up. Now adjust T1 to get the maximum phasing possible without noise or oscillation. Spot check it with the slowest Speed setting and make finer adjustments until you have the best sounding phaser output. That’s all there is to it!

Univibe Mod

If you want to try something a bit different, you can substitute the Univibe phasing sequence in place of four of the six phasing stages. While it does not turn the Stage Fright into a Univibe it does impart more of a “lilt” and is a somewhat more expressive phaser, IMO.

To do the Univibe mod, socket or replace the 1n caps with the following:

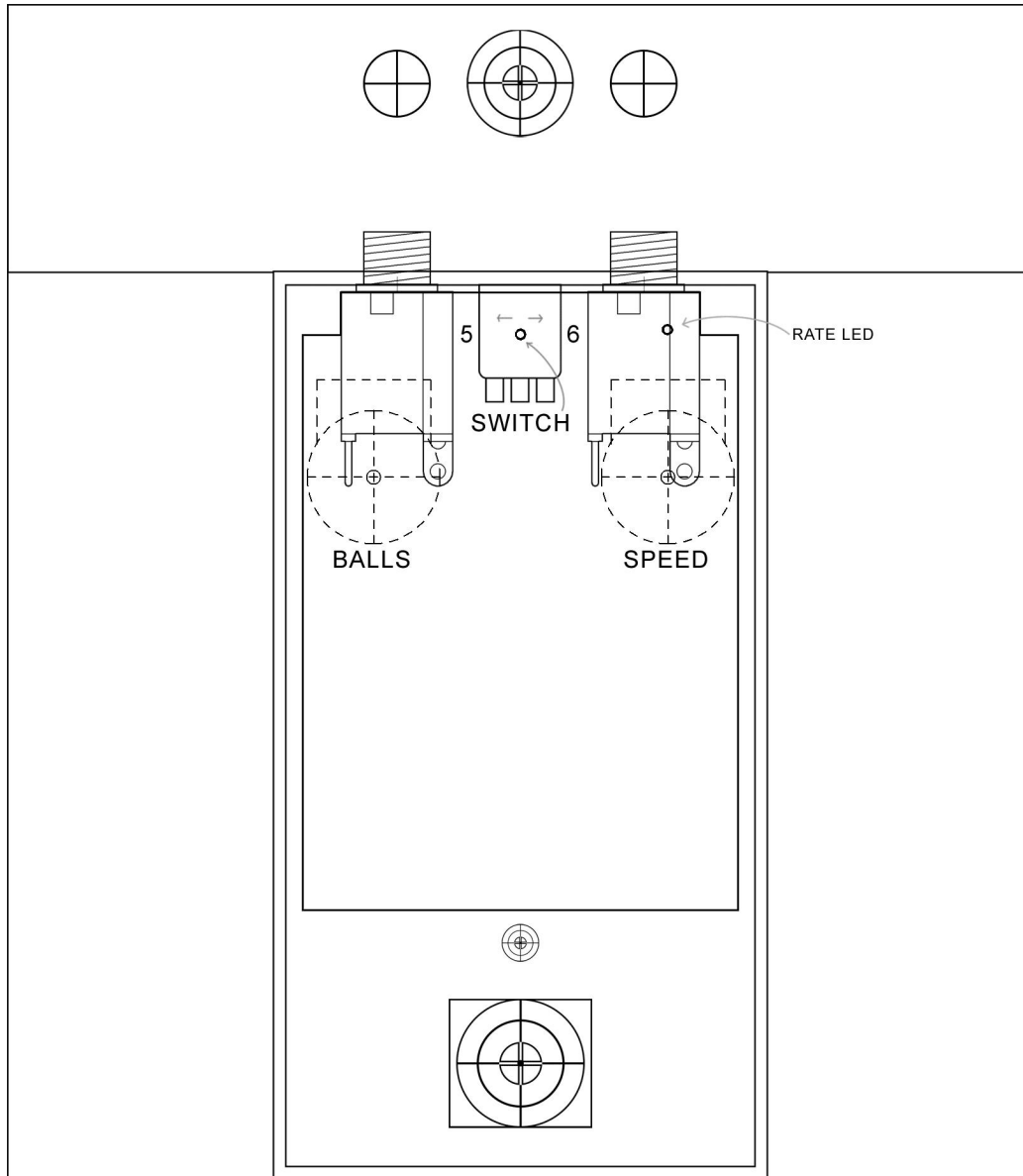
C5 – 15n
C6 – 220n
C7 – 470pF
C8 – 4n7

This replaces the middle 2-5 stages of the phaser with the Univibe set. The build video linked on page one of the doc uses this exact mod.

Since someone will inevitably ask: you can use a switch to go between the regular phase caps and the Univibe set. It is extremely painful to wire. Doing so requires a 4PDT toggle with each set of caps wired to the switch then wired back to the PCB. It is not worth it, IMO. In fact, one of the earlier designs of the Stage Fright had this mod included, but I feel that it is too much effort for not enough result. I suggest socketing those four caps and trying each set for yourself to see if you agree.

125B Drill Template

5.4" W x 6.17" H



This template is approximate. Please check carefully before committing to drill.

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