

MAGLEV

FX TYPE: Delay

Based on the Keeley Elec.® Magnetic Echo™

Enclosure Size: 1590B

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Overview

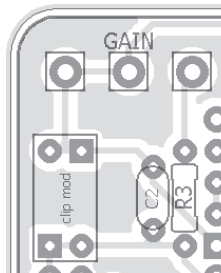
The **Maglev** is based on the Magnetic Echo™ PT2399 delay. I've included several mods to enhance and expand its functionality. These are completely optional and you can pick and choose whichever ones you prefer.

Standard mods

- Replaced all 1uF electrolytic with film cap. Added separate power rail for the LFO. Added a small value cap at the input gain stage for high frequency filtering. Made the Gain trimpot an external control.

Enhancement mods

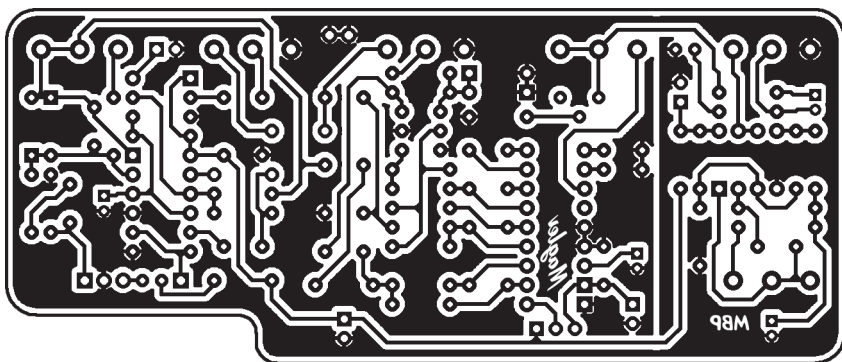
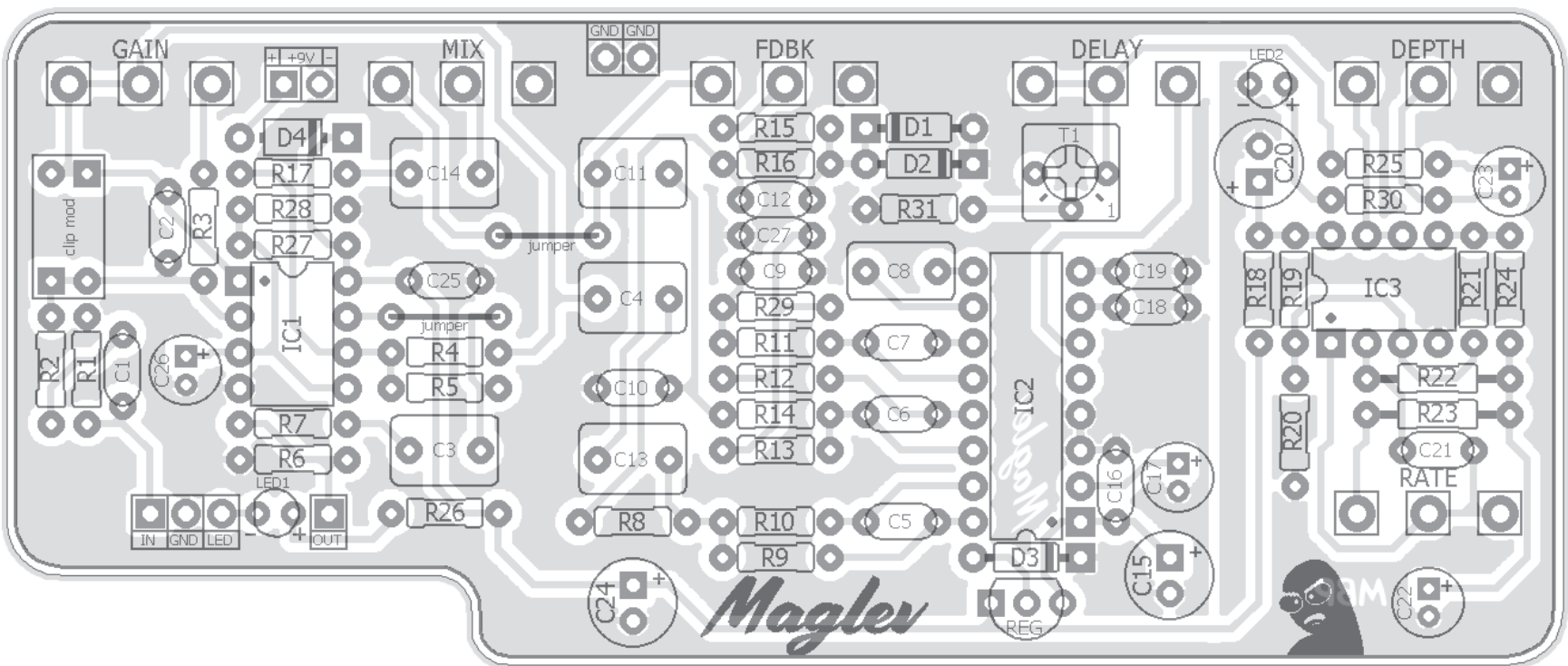
- Extra Gain: If you want more input gain, try 200kB or 250kB for the Gain pot. If you want to add soft-clipping, there are four pads under the Gain pot for two back to back clipping diodes. Suggest either 1n4001 or 1n914 (p.s. I don't know how well this will work - I added it b/c there was space on the board so sockets may be in order). Added gain will increase the total volume output, obviously. You could go even further by subbing in a 100kA pot in place of R6 to act as an output volume control, if you like.



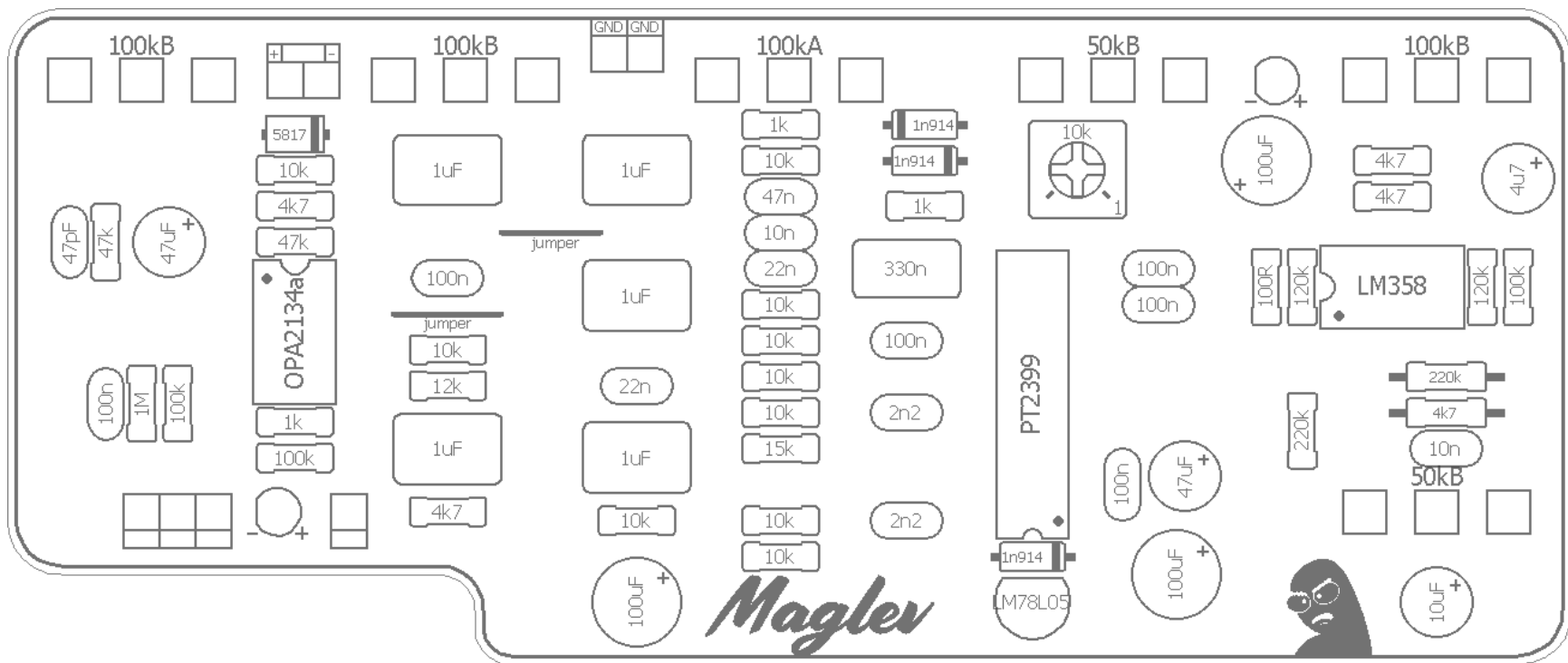
- Headroom mod: Solder in a 1n914 for D3. This raises the output voltage of the LM78L05 to about 5.5v which, in turn, allows for slightly increased headroom at LPF1 and LPF2 embedded in the PT2399. For a stock build, simply use a jumper for D3 (for standard 5v operation).
- Stock delay/filtering: Omit C27, jumper R29. Delay pot: 50kB
- Extended delay/filtering (800ms-1sec): C27: 10n, R29: 10k, R13: 22k, Delay pot: 100kB
- Stock modulation: set T1 fully CCW.
- Extended modulation: adjust T1 CW to taste. This will result in more modulation depth on tap.
- LED2 is a rate indicator for the LFO speed. You can omit it, if desired.

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Technical assistance for your build(s) is available via the [madbeanpedals forum](https://www.madbeanpedals.com/forum). Please go there rather than emailing me for assistance on builds. This is because (1) I'm not always available to respond via email in a timely and continuous manner, and (2) posting technical problems and solutions in the forum creates a record from which other members may benefit.



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Note the two jumpers

Resistors		Caps		Diodes	
R1	1M	C1	100n	D1	1n914
R2	100k	C2	47pF	D2	1n914
R3	47k	C3	1uF	D3	1n914
R4	10k	C4	1uF	D4	1n5817
R5	12k	C5	2n2	ICs	
R6	100k	C6	2n2	IC1	OPA2134a
R7	1k	C7	100n	IC2	PT2399
R8	10k	C8	330n	IC3	LM358
R9	10k	C9	22n	Regulators	
R10	10k	C10	22n	REG	LM78L05
R11	10k	C11	1uF	Trimmers	
R12	10k	C12	47n	T1	10k
R13	15k	C13	1uF	Pots	
R14	10k	C14	1uF	DELAY	50kB
R15	1k	C15	100uF	RATE	50kB
R16	10k	C16	100n	FDBK	100kA
R17	10k	C17	47uF	DEPTH	100kB
R18	100R	C18	100n	GAIN	100kB
R19	120k	C19	100n	MIX	100kB
R20	220k	C20	100uF		
R21	120k	C21	10n		
R22	220k	C22	10uF		
R23	4k7	C23	4u7		
R24	100k	C24	100uF		
R25	4k7	C25	100n		
R26	4k7	C26	47uF		
R27	47k	C27	10n		
R28	4k7				
R29	10k				
R30	4k7				
R31	1k				

Value	QTY	Type	Rating
100R	1	Metal / Carbon Film	1/4W
1k	3	Metal / Carbon Film	1/4W
4k7	5	Metal / Carbon Film	1/4W
10k	10	Metal / Carbon Film	1/4W
15k	1	Metal / Carbon Film	1/4W
12k	1	Metal / Carbon Film	1/4W
47k	2	Metal / Carbon Film	1/4W
100k	3	Metal / Carbon Film	1/4W
120k	2	Metal / Carbon Film	1/4W
220k	2	Metal / Carbon Film	1/4W
1M	1	Metal / Carbon Film	1/4W
47pF	1	Ceramic / MLCC	16v min.
2n2	2	Film	16v min.
10n	2	Film	16v min.
22n	2	Film	16v min.
47n	1	Film	16v min.
100n	6	Film	16v min.
330n	1	Film	16v min.
1uF	5	Film	16v min.
4u7	1	Electrolytic	16v min.
10uF	1	Electrolytic	16v min.
47uF	2	Electrolytic	16v min.
100uF	3	Electrolytic	16v min.
1n914	3		
1n5817	1		
OPA2134a	1		
PT2399	1		
LM358	1		
LM78L05	1		
10k	1	Bourns 3362p	
50kB	2	PCB Right Angle	16mm
100kA	1	PCB Right Angle	16mm
100kB	3	PCB Right Angle	16mm

Note: Drill Guides are approximate and may require tweaking depending on the types of hardware you use.

