

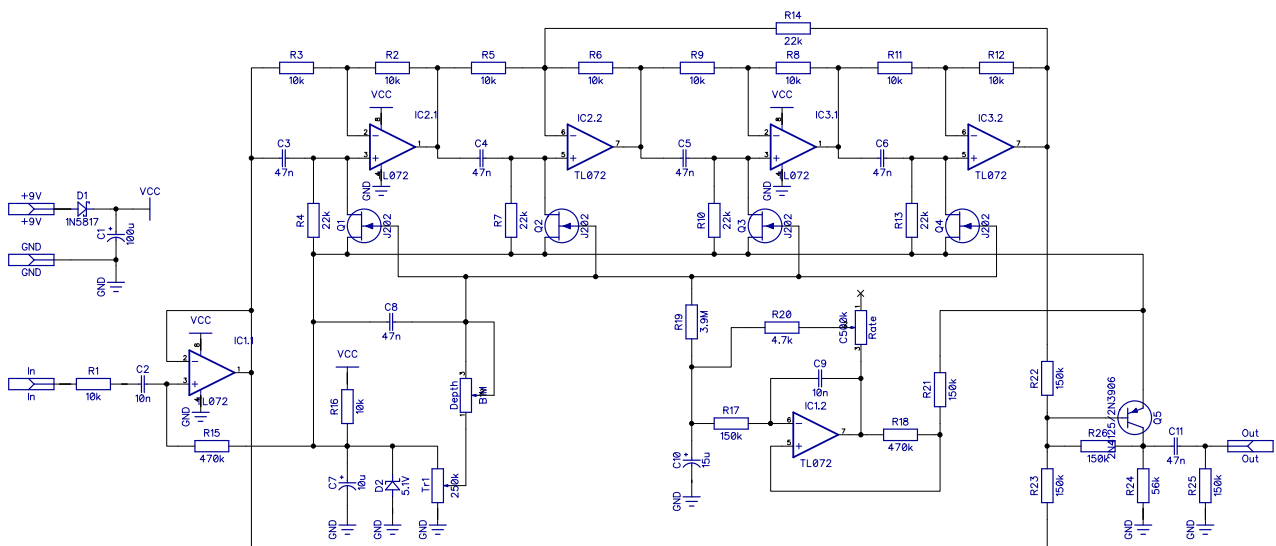


Live Long And Prosper

MXR Phase 90 clone
PCB artwork ©2018 drdFX
Release date: 2018. 04. 06.

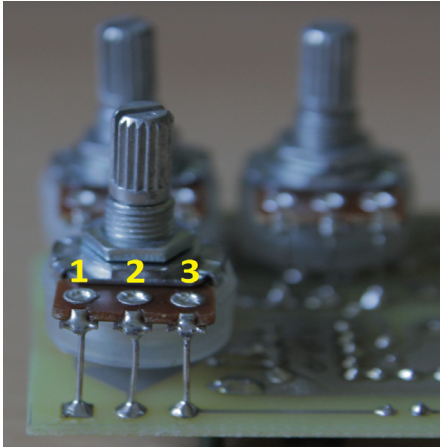
The Live Long And Prosper (LLAP) is a clone of the famous MXR Phase 90 with an additional pot for the depth control.

SCHEMATIC



BOM							
Resistors		Capacitors		Semiconductors		Others	
R1	10k	C1	100u	D1	1N5817	Depth	B1M
R2	10k	C2	10n	D2	5.1V	Rate	C500k
R3	10k	C3	47n	Q1	J202	Tr1	250k
R4	22k	C4	47n	Q2	J202		
R5	10k	C5	47n	Q3	J202		
R6	10k	C6	47n	Q4	J202		
R7	22k	C7	10u	Q5	2N4125/2N3906		
R8	10k	C8	47n	IC1	TL072		
R9	10k	C9	10n	IC2	TL072		
R10	22k	C10	15u	IC3	TL072		
R11	10k						
R12	10k						
R13	22k						
R14	22k						
R15	470k						
R16	10k						
R17	150k						
R18	470k						
R19	3.9M						
R20	4.7k						
R21	150k						
R22	150k						
R23	150k						
R24	56k						
R25	150k						
R26	150k						

NOTES



The pots are board mounted to the bottom of the board. The square pads mark the lug 1, for the numbering of the lugs see the picture.

There are several mods for the MXR Phase 90. The most popular is the “Depth knob mod” which is already included in the LLAP. To avoid it simply replace the Depth pot with a fixed 1M resistor.

Other popular mod is the “script/box” switch. This should change between the different feedback types of the older “script” and the newer “box” types. The difference between the two models is the R14 feedback resistor. The LLAP follows the “block” model and has this resistor but you could make it switchable: remove R14 and run two wires from the two solder pads to a DPDT switch’s two center lugs. Solder R14 between the two outer lugs on one side and leave the other two outer lugs unconnected. Another option is to replace R14 with a pot as a variable resistor, like the EVH model. Feel free to experiment with this.

When engaged the effect boosts the signal a bit. To correct this you could either lower R25’s value (though then you risk to introduce the dreaded “click effect”) or you could add a final volume pot or trimmer to the output. I have used a trimmer on mine internally in a “set and forget” manner, but you can obviously put this option on an external pot as well.

Some words on the JFETs: the original calls for 2N5952. Since JFETs are rare and not so easy and cheap to obtain these days, I have tried and successfully used the more readily available J202s in the LLAP without any modifications. You can try any of them, but make sure you follow the right pinout. Also you need to match the JFETs, for this you can read more on R. G. Keen’s website:

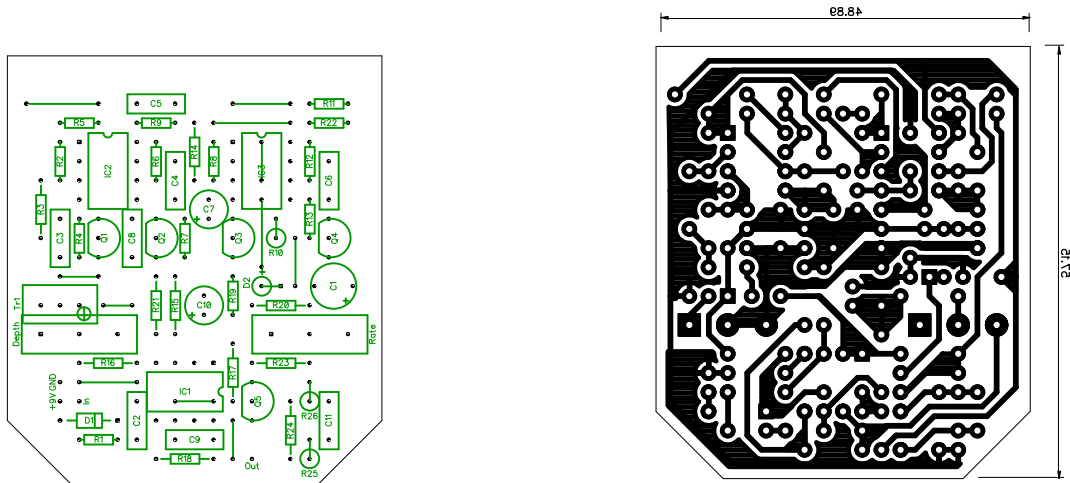
http://www.geofex.com/Article_Folders/fetmatch/fetmatch.htm

Alternatively you can buy matched quads at any of the usual parts sources, like Musikding or Banzai in Europe or Smallbear in the US.

LAYOUT

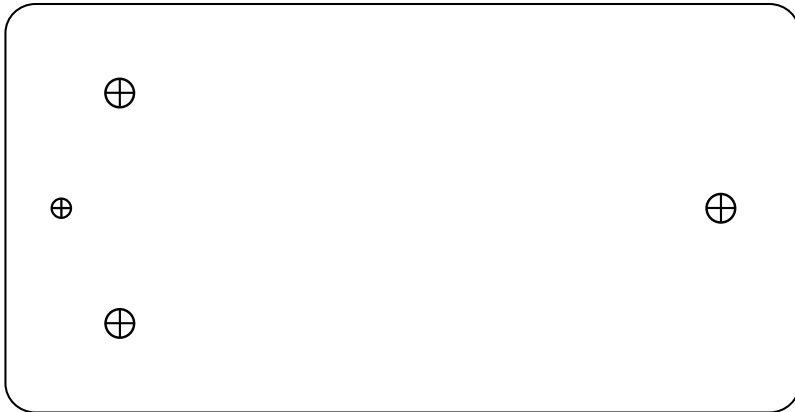
Print out the PCB design without any resizing options and make sure you switch off the “fit to page” option. The design is free for personal/home use and you also may build one or two for your friends, but the PCB layout is my artwork, therefore protected by copyright and is not permitted to be used for commercial purposes. The layout is meant for the 1590B and the 125B size enclosures. Please note that in the 1590B enclosure a battery won't fit anymore, if you need battery driven operation too, then you will need to stick with the slightly larger 125B enclosure.

1590B/125B layout and PCB



DRILLING TEMPLATES

The below drilling templates are for 1590B and 125B.



1590B



125B