P90 (MXR™ Phase 90™ Replica) Instructions

Version 2015June29

This is a **MXR™ Phase 90™ Script version Phase Shifter** replica known here as the P90. Follow the Bill of Materials, the Layout diagram and General Build Instructions.

Important Note: If you are building this to fit in a 1590B size enclosure, **Do Not use IC Sockets**. The ICs will have to be soldered directly onto the PCB due to space limitations.

This replica has held to the original layout as much as possible and still offer some great modern “Non-tone-altering upgrades; 1) true-bypass with LED indicator 2) top layer trace to replace the wire jumper across the top of the originals (and the reissues). The original units had a 2N4125 PNP transistor, the kit includes 2N3906 PNP transistor. We don't believe that there is any sound difference in using the 2N3906 as a replacement. The Kit also includes four matched 2N5952 JFET transistors, as in the originals.

There is an R15 resistor that is in some of the later Phase 90's. It is shown in the schematic, but is not shown in the layout because it is not in the Script version. There is a place for it, so you can added it. We added it in the one pictured below so you can see where it would be. It works either way.

Notes to anyone who etched their own PCB:

1. You need to have a wire jumper on the top of the PCB as shown in the diagram on the project page.
2. If you use a 500k “C” (Reverse Taper) potentiometer, you should wire the pot as shown in the alternate wiring diagram.

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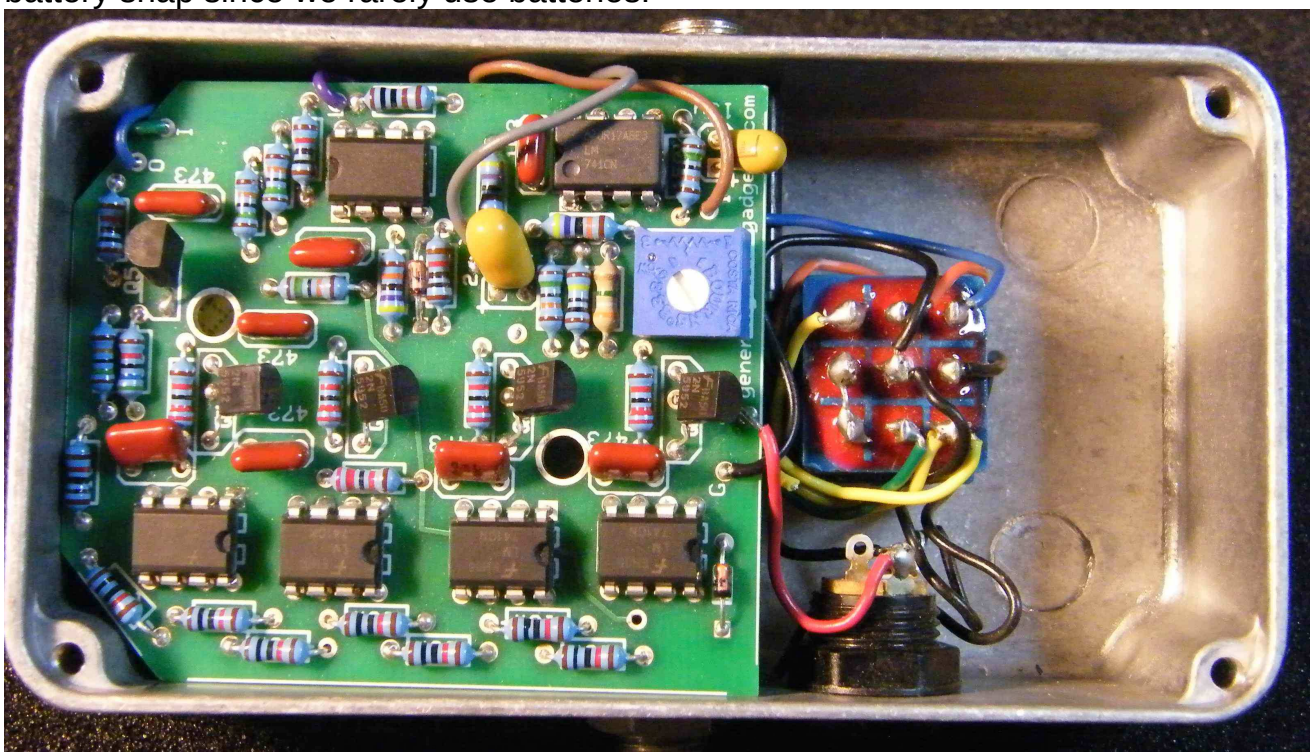
Here is a photo of the PCB and the inside of the box. Note that we didn't install a battery snap since we rarely use batteries.



Here are voltage readings taken from our prototype unit. The voltage on the Gate of the JFETS moves around some. Put the speed on lowest setting (full counter-close-wise).

Component	Location	Voltage
9 volt power supply		9v
Q2, Q3, Q4	Gate	2.5v plus or minus some
	Source	5.0v
	Drain	5.0v
Q5	Collector	4.3v
	Base	3.7v

	Emitter	2.6v
IC1	Pin 1	Less than 0.01v
	Pin 2	Less than 0.01v
	Pin 3	4.4v
	Pin 4	0v
	Pin 5	Less than 0.01v
	Pin 6	4.4v
	Pin 7	9v
	Pin 8	0v
IC2, IC3, IC4, IC5	Pin 1	Less than 0.01v
	Pin 2	5v
	Pin 3	5v
	Pin 4	0v
	Pin 5	Less than 0.01v
	Pin 6	2.1v
	Pin 7	9v
	Pin 8	0v
IC6	Pin 1	0v
(IC6 pin voltages vary	Pin 2	5v
with speed control)	Pin 3	4.7v
	Pin 4	0v
	Pin 5	0v
	Pin 6	4v
	Pin 7	9v
	Pin 8	0v

Comments and questions are welcome and can be sent to info@generalguitargadgets.com