Improved EA Tremolo Instructions

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This is a tremolo project from the November 1968 issue of the Electronics Australia Magazine. This wonderful sounding tremolo was brought to the Internet by Greg Nabke and some great modifications have been posted over the years by Robert Strand, the folks at runoffgroove.com and others. Lots of "Boutique" effects builders have used this basic design for their tremolo units and lots of players and builders love this project because it sounds so good and is simple to build. The title of the project in the 1968 magazine issue was A Guitar Preamp with fully solid-state Vibrato. The term "vibrato" was misused here in the same way that Fender misused the term on their amplifiers, it is actually tremolo (tremolo being amplitude modulation, vibrato being pitch modulation).

This project includes what we think are the best of the modifications for good depth and speed controls and for better use in a modern-day rig. We used some of the modifications to Speed and Depth from the runoffgroove.com site, but we decided against using the MOSFET first stage, due to the fact that MOSFET transistors are sensitive to failure due to exposure to common static electricity during installation. The JFET stage (first transistor stage in the circuit) we use sounds great. Note that these modifications are all part of the base project and therefore the name of the project is **Improved EA Tremolo**. There are more modifications above and beyond these with full instructions in the **Improved EA Tremolo Modification** Document.

Unlike most tremolo units, this one has a **Volume** knob. This is a great feature that adds function and charm. Tremolo at unity gain gives the illusion of a volume loss, the volume control gives you the ability to fine tune the effect or go wild if needed.

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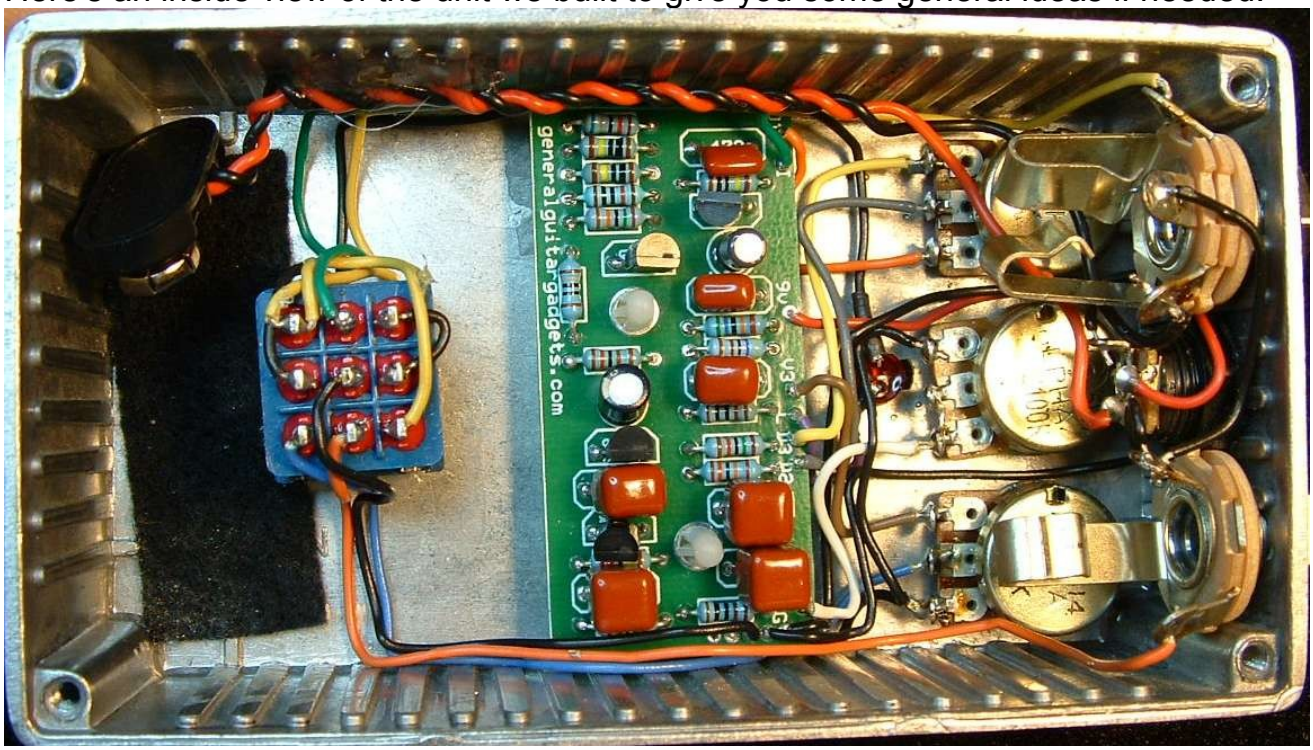
There is a lot of gain at the upper levels of the volume control. Also, there is an excellent booster modification listed in the Modifications document that makes good use of Volume Control.

Use the project documents provided, starting with the General Build Instructions. **Important Note**: There is a minor error on some of the older PCB's screen print. The polarity of **C3** is backwards. All the diagrams show the correct orientation, so refer to the part placement diagrams when installing the **C3** polarized capacitor if you think you have an older PCB. It will actually work fine with the capacitor backwards, but the Booster modification won't work.

There are some options for the LED indicators. A flashing LED can be installed to show the rate of speed of the tremolo. This can be installed as the bypass indicator, or as a separate indicator that can show the rate even when bypassed. The wiring diagrams and instructions for some of the wiring configurations for the LEDs are listed in the Modifications document.

Here's an inside view of the unit we built to give you some general ideas if needed.



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

Here is a chart of voltages taken at the transistor pins. This information can be used to help you find and fix problems if your EA Tremolo doesn't work when you test it.

Component	Location	Voltage
9 volt power supply		8.8v
Q1	Collector	6.0v
	Base	1.4v
	Emitter	0.8v
Q2	Drain	0.0v
	Source	0.0v
	Gate	variable
Q3	Collector	variable (with Speed Knob)
	Base	0.6v
	Emitter	0.0v
Q4	Drain	8.8v
	Source	5.0v
	Gate	4.1v